PARATECH®

OPERATION AND MAINTENANCE MANUAL

FOR

RESCUE SUPPORT SYSTEMS

(LOCKSTROKE STRUT SYSTEM)

(ACMETHREAD STRUT SYSTEM)

(LOW CLEARANCE SUPPORT SYSTEM)

16 JAN 2013

PN 22-796198 QAP20/130/A

Paratech Incorporated
P.O. Box 1000, Frankfort, IL 60423 USA
Customer Service: 800.435.9358
Phone: 815.469.3911 Fax: 815.469.7748
www.paratech.com E-mail: paratech@paratech.us

Paratech Europe, Branch of Paratech Inc.
P.O. Box 174, 5260 Odense S, Denmark
Phone: +45.66.11.24.22 Fax: +45.66.11.24.23
www.paratech.com Email: paratech@paratech.dk

MADE IN THE USA

LIST OF EFFECTIVE PAGES

Date of original pages is:

Original . . . Change . . . 0. . . .19 June 1994

Total number of pages in this publication is 48 consisting of the following:

Page No.	*Change No.	Page No.	*Change No.
Title and	0	1-1 through 1-10	8
Change Record	8	2-1 through 2-10	1, 2, 3, 8
Change Record-2 blank	0	3-1	0
Forward-1	0	3-2 blank	0
Forward-2 blank	0	4-1 through 4-10	8
i through iii	8		
iv blank	0		

*Zero in this column indicates an original page.

VALIDATION CERTIFICATE

TECHNICAL MANUAL TITLE
OPERATION AND MAINTENANCE MANUAL FOR RESCUE SUPPORT SYSTEMS
(LOCKSTROKE STRUT SYSTEM) (ACMETHREAD STRUT SYSTEM) (LOW CLEARANCE SUPPORT SYSTEM)

TECHNICAL MANUAL NUMBER	DATE
P/N 22-796198	16 January 2013

CONTRACT/NO.

I-VALIDATION

Except as stated in II, the technical manual identified above has been satisfactorily validated in accordance with all requirements of the applicable contact. The technical manual is hereby certified to be accurate and complete, and the information, instructions, text, and illustrations conform in all respects to the applicable general and detailed specifications.

II - EXCEPTIONS

EXCEPTIONS	AUTHORIZED BY
NONE	

Ken Nielsen
Chief Operating Officer

Paratech Incorporated
1025 Lambrecht Road
Frankfort, Illinois 60423-7000

SIGNATURE OF PUBLICATIONS QUALITY ASSURANCE OFFICER	DATE
SIGNATURE ON FILE	

CHANGE RECORD

Change No.	Date	Title and/or Brief Description	Signature of Validating Officer
1	15 JUN 1995	Page 2-3: Table 2-2 Min. Max. Lengths with bases added	SIGNATURE ON FILE
2	15 JUN 1995	Text and Table 2-8 (p.-2-9) simplified	SIGNATURE ON FILE
3	15 AUG 1995	Page 2-10 added	SIGNATURE ON FILE
4	05 SEP 1995	Tables 2-4, 2-5, 2-6 modified	SIGNATURE ON FILE
5	23 MAY 2001	Text Paragraph 1.6 a., b., c., g.	SIGNATURE ON FILE
6	02 FEB 2002	Text to warning #2 in Safety Summary p. iii	SIGNATURE ON FILE
7	26 APR 2006	Removed Figure 1-24, 1-25 and accompanying text 1-6.2.a relief valve pressure changed from 350 psi to 250 2-3.1.c delivery pressure changed from 350 psi to 300 Table 2-3 activation pressure 300 and 350 psi removed	SIGNATURE ON FILE
8	16 JAN 2013	Removed Figure 1-4, 1-5, 1-21 and accompanying text. Added new figure1-15 through 1-22 and replace figure1-4, 1-5 and 1-21 with new bases and connectors. Changed figure 2-1 with Dual Deadman G2 controller. Added figure 1-31A Single Strut Controller G2 and figure 1-32A Dual Deadman RSS Controller G2 Deleted lock pin assembly exploded view. Lock pin is not repairable and no longer locks in the open position. Replaced all strut drawings to current strut components. Removed overall lengths of struts with bases. Added length increase of every base with struts and extensions	SIGNATURE ON FILE

FOREWORD

This technical manual conforms to Military Specifications MIL-STD-38784, General Style and Format Requirements, MIL-PRF-32216 Commercial Equipment Technical Manual and MIL-DLT-24784 Equipment and Systems Content Requirements for Technical Manuals. The manual contains description, operating instructions, theory of operation, scheduled maintenance recommendations, troubleshooting, corrective maintenance and parts lists for LockStroke Strut, AcmeThread Strut and Low Clearance Support Rescue Support Systems manufactured by Paratech Incorporated, 1025 Lambrecht Road, Frankfort, Illinois 60423-1648.

All pertinent data relative to the Rescue Support Systems is contained herein without specific reference to other publications. Refer to the table of contents for the arraignment of the contents within this publication.

This manual consist of one volume arranged in four chapters as follows:

Chapter 1 - General Information and Safety Precautions

Chapter 2 - Operation

Chapter 3 - Scheduled Maintenance

Chapter 4 - Parts List

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SAFETY SUMMARY

The following are general safety precautions that are not related to any specific procedures, and therefore do not appear elsewhere in this publication. These are recommended precautions that personnel must understand and apply during many phases of operation and maintenance.

The Rescue Support Systems covered in this publication should be used only by trained and qualified personnel familiar with collapse and containment procedures.

Before using this equipment, read and understand these instructions.

Personnel not directly involved in operation or maintenance of a rescue support system should be kept a safe distance from the work area.

Installation/operation of a rescue support system by unauthorized personnel or minors is prohibited.

Wear proper apparel and safety goggles during operation and maintenance of safety support system.

During operation, do not over reach. Maintain a stable footing and balance at all times.

Do not connect any pressurized hose to a strut. Bleed off any pressure from the strut and/or before connecting or disconnecting hoses.

Never point a strut toward yourself or other personnel. Accidental activation could cause the strut to extend rapidly and forcibly resulting in serious injury or possible death. Do not activate a strut unless it is between two work surfaces.

All struts used in trench shoring and rescue operations must be used in accordance with OSHA1926.650-1926.652 subpart P regulations for excavations.

Keep the work area clean when maintaining or repairing a rescue support system. The following warnings and cautions appear in the text of this manual, and are repeated here for emphasis:

WARNING

Do not use any accessory that exhibits an air leakage condition. Any reduction of air pressure could result in collapse and endangerment of personnel.

WARNING

In collapse rescue situations struts are not designed to accept more than 2 extensions 3 feet (91.44 cm) in length.

WARNING

Do not adjust pressure regulator to exceed the maximum pressure rating of any component in the system apparatus.

WARNING

Do not use struts as a ladder in trenching operations.

CHAPTER 1
GENERAL INFORMATION AND SAFETY PRECAUTIONS

1-1 **SAFETY PRECAUTIONS.**

Refer to the Safety Summary preceding Chapter 1, General Information and Safety Precautions, for safety precautions necessary for the protection of personnel and equipment.

1-2 **INTRODUCTION.**

This technical manual provides instructions for the installation, operation, maintenance and parts support for Rescue Support Systems (RSS) manufactured by Paratech Incorporated, 1025 Lambrecht Road, Frankfort, Illinois 60423.

The RSS are designed for use in rescue situations involving collapse, containment or stabilization. These situations include such diverse incidents as building collapse, structural containment, vehicular extrications, industrial entrapment, and excavation collapse and containment.

The RSS are manufactured from aluminum alloys for light weight and strength. They are designed to be used in place of or in conjunction with wood cribbing, or other shoring or support devices.

The RSS meets OSHA requirements when used in accordance with OSHA 1926.650 -1926.652 subpart P regulations for excavations,

1-3 **EQUIPMENT DESCRIPTION.**

1-3.1 **LOCKSTROKE STRUT.** The LockStroke Strut, Figure 1-1, consist of various sizes of extendable struts plus various end plates and extensions. Each strut consists of a 2-1/2" (6.4 cm) diameter aluminum alloy movable grooved shaft and a 3" (7.6 cm) diameter aluminum alloy outer tube. The struts are extended manually or from a pneumatic pressure source such as air, carbon dioxide or nitrogen.

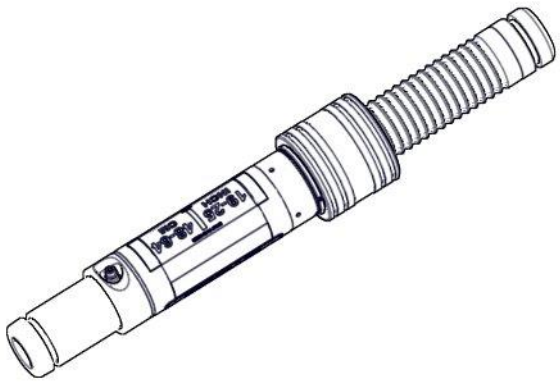
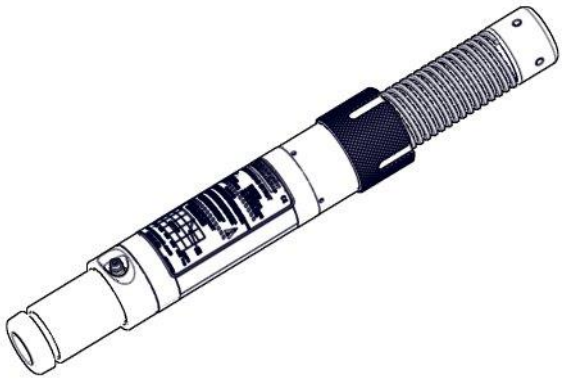


Figure 1-1. LockStroke Strut

The LockStroke extendable strut locks automatically in increments of 0.400" (1 cm) without the necessity of manually inserting a locking pin. This feature permits the extension and locking of the LockStroke support system from a remote location. Hands free locking occurs through integration of a double row ball lock coupling. The strut axial crush strength exceeds 50,000 pounds (22,680 kg).

Take down and repositioning is accomplished by removing the load pressure and then manually operating the release ring to permit collapsing of the strut. If during take down, a load shift begins to forcibly collapse the strut, simply letting go of the release ring will again lock the strut in the extended position at the time the release ring was released.

1-3.2 **ACMETHREAD STRUT. T**he AcmeThread Strut, Figure 1-2, consist of various sizes of extendable struts plus various end plates and extensions. Each strut consist essentially of a 2 1/2" (6.4 cm) diameter aluminum alloy inner movable acme threaded shaft and a 3" (7.6 cm) diameter aluminum alloy outer tube. The struts are extended manually or from a pneumatic pressure source



such as air, carbon dioxide, or nitrogen.

Figure 1-2. AcmeThread Strut

The design of the AcmeThread strut permits "soft" placement with sensitive positioning, and locking at an infinite number of extended positions within the range of the strut. When the strut is extended manually or pneumatically to the desired length, an acme threaded nut moves with the inner, acme threaded shaft. The nut can be manually turned down the inner shaft and secured against the outer tube to lock the strut in any desired extended position. This feature permits the AcmeThread strut to lock in any desired set point resulting in gentle yet secure support of an area with a minimum of shock and displacement of the load. The strut axial crush strength exceeds 50,000 pounds (22,680 kg).

Take down and repositioning is accomplished by removing the load pressure then manually turning the nut up the inner shaft. If during release, a load shift begins to forcibly collapse the strut, simply releasing the nut will again lock the strut in the extended position where the nut was released.

1-3.3 **LOW CLEARANCE SUPPORT SYSTEM.** The Low Clearance Support System, Figure 1-3, consists of a series of bases and solid supports. Low clearance supports are designed as pre rescue devices where support of 3" (7.6 cm) to 10" (25 cm) void (separation) is required before rescue work can commence. The system functions in conjunction with close clearance lifting devices such as air bags, hydraulic or manual tools.

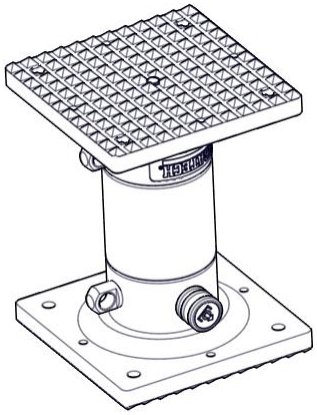


Figure 1-3 Low Clearance Support System

1-3.4 **END PLATES/FITTINGS.** The following end plates/fittings are available to enhance the versatility of the RSS. All end plates/fittings are equipped with a pull locking pin to provide for their easy and rapid installation and removal.

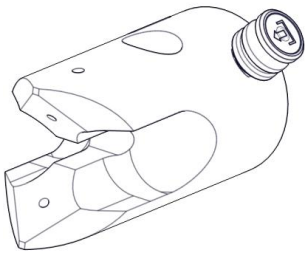


Figure 1-4.
Multi-Base
Part number 22-796025

a. **Multi-Base.** The Multi-Base (Figure 1-4) is a 3" (7.6 cm) diameter cylinder base with a claw-like wedge with slot for 3/8" chain. The 90 degree "V" end slot with two cross drilled holes for nails to secure to a corner or edge. Either of the two arms in a shape of a cone provide additional point loaded applications.

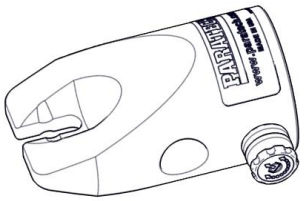


Figure 1-5
Chain Wedge for 3/8" Chain
Part Number 22-796130

b. **Chain Wedge for 3/8" Chain.** The Chain Wedge for 3/8" chain (Figure 1-5) is a 3" (7.62 cm) diameter cylinder machined to a wedge, A slot is cut in the end to accommodate a 3/8" chain.

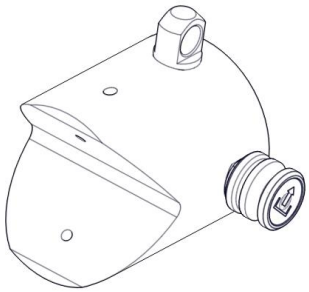


Figure 1-6. V-Base
Part Number 22-796090

c. **V-Base.** The V-Base (Figure 1-6) is a 3" (7.6 cm) diameter cylinder base with a 90° "V" machined approximately 1" (2.5 cm) deep at its center and two crossed drilled holes for securing to a corner or an edge. The V-Base is primarily used to stabilize anything with a corner or angle at the point of support.

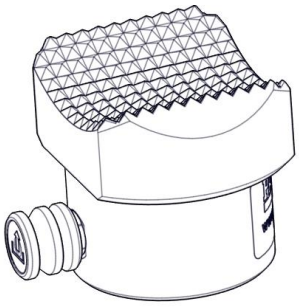


Figure 1-7. Contour Base
Part Number 22-796270

d. **Contour Base.** The Contour Base (Figure 1-7) is shaped to have curved, slip resistant surface that could be placed on desirable point at variable angle

Figure 1-8. Offset Cone Base
Part Number 22-796560

e. **Offset Cone Base.** The Offset Cone Base (Figure 1-8) is a hub with an angle top with a threaded steel cone that is perpendicular to the face. One side of the cone will be vertical and be able to be applied very close to a chosen side. The angled hub surface will serve as a stop surface to prevent excessive penetration.

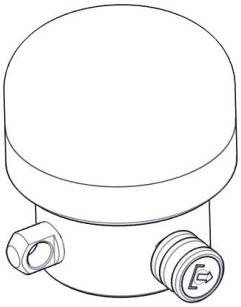


Figure 1-9. Rubber Base 4"
Part Number 22-796190

f. **Rubber Base 4".** The Rubber Base 4" (Figure (1-9) shall be a standard base with a 4" rubber cap, used to stabilize struts where the bearing surface is smooth but cannot be pierced. The Rubber Base 4" is equipped with a brass eye for lowering/positioning.

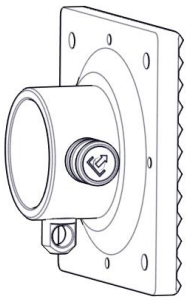


Figure 1-10. Rigid Strut Base 6
Part Number 22-796070

g. **Rigid Strut Base 6.** The Rigid Strut Base 6 (Figure 1-10) is a 6" (15.2 cm) square with non-skid grooved surface plate. The Rigid Strut Base 6 functions well against 90 degree parallel solid surfaces.

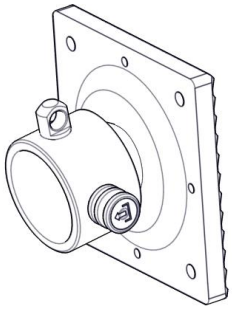


Figure 1-11. Swivel Strut Base 6
Part Number 22-796060

h. **Swivel Strut Base 6.** The Swivel Strut Base 6 (Figure 1-11) is a 6” (15.2 cm) square with non-skid grooved surface plate, The Swivel Strut Base cup can swivel 360 degrees around the plate and angle for a maximum of 20 degrees off a 90 degree vertical, The swivel strut base is used where the surfaces to supported are not parallel.

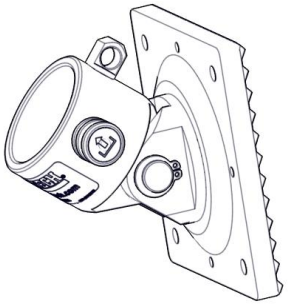


Figure 1-12. Hinged Strut Base 6
Part Number 22-796140

i. **Hinged Strut Base 6.** The Hinged Strut Base 6 (Figure 1-12) is a 6” (15.2cm) square plate with a grooved non slip surface and a cup that can hinge 45° about the pivot pin axis off a 90 degree vertical plane.

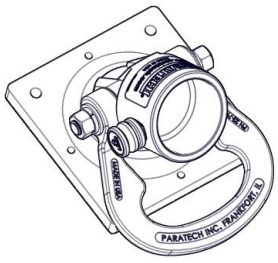


Figure 1-13. Hinged Base 6 w/Anchor Ring
Part Number 22-796150

j. **Hinged Base 6 w/Anchor Ring.** The Hinged Base 6 w/Anchor Ring (Figure 1-13) is similar to Hinged Strut Base 6 except with a 5000 lbs working load Anchor Ring added to the base.

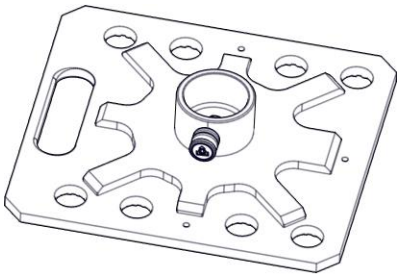


Figure 1-14. Rigid Base 12
Part Number 22-796180A

k. **Rigid Base 12.** The Rigid Base 12 (Figure 1-14) is similar to Rigid Strut Base 6 except with a 12" base plate with 8 holes to accept 1” (2.5cm) pickets.

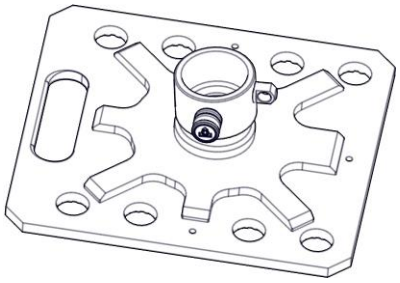


Figure 1-15. Swivel Base 12
Part Number 22-796180B

l. **Swivel Base 12.** The Swivel Base 12 (Figure 1-15) is similar Swivel Strut Base 6 except with a 12" base plate with 8 holes to accept 1” (2.5 cm) pickets.

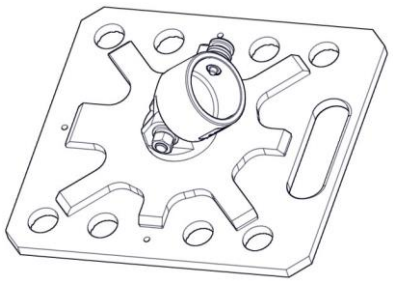


Figure 1-16. Hinged Base 12
Number 22-796180R

m. **Hinged Base 12.** The Hinged Base 12 (Figure 1-16) is similar to Hinged Base 6 except it has a 12" base plate with 8 holes to accept 1” (2.5 cm) pickets.

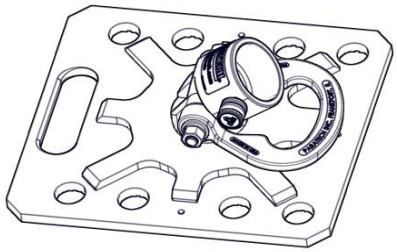


Figure 1-17. Hinged Base 12 W/Anchor Ring
Number 22-796180C

n. **Hinged Base 12 W/Anchor Ring.** The Hinged Base 12 W/Anchor Ring (Figure 1-17) is similar to Hinged Base w/Anchor Ring 6 except it has a 12" base plate with 8 holes to accept 1” (2.5 cm) pickets

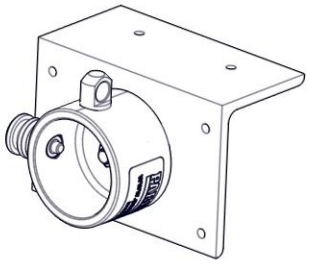


Figure1-18. Angle Base 3" x 4"
Part Number 22-796092

o. **Angle Base 3" X 4".** The Angle Base 3" X 4" (Figure 1-18) incorporates a 2-3/4" (7.0 cm) lip to hang a strut for hands-free operation. Typically used at a trench cave-in where wales must be rebrased before personnel are permitted to enter the excavation.

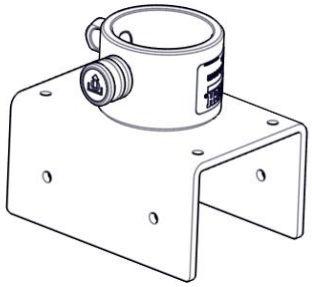
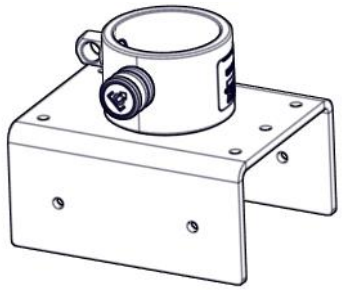


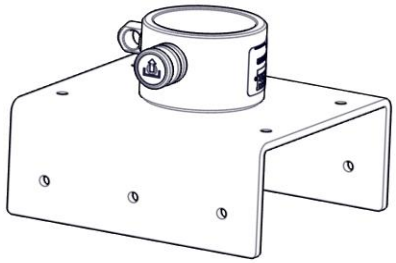
Figure 1-19. Channel Base 4" X 4"
Part Number 22-796134

p. **Channel Base 4" X 4".** The Channel Base 4" X 4" (Figure 1-19) is essentially a strut base cup secured to a 4" X 4" (10.2 cm X 10.2 cm) channel. The Channel Base 4" X 4" is 6" (15.2 cm) long X 2-3/4" (7.0 cm) high X 3-1/2" (8.9 cm) wide. The Channel Base 4" X 4" is designed specifically for shoring operations. It fits snugly over 4" X 4" shoring lumber where it can be anchored with screws or nails.



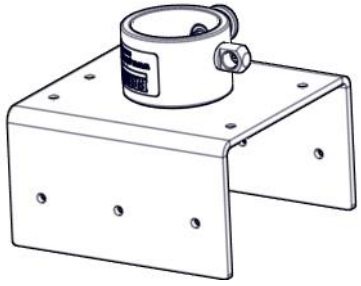
1-20 Channel Base Metric 4.3" x 6"
Part Number 22-796131

q. **Channel Base 4.3” X 6".** The Channel Base 4.3” X 6" (Figure 1-20) is essentially a strut base cup secured to a 4.3” X 6" (10.9 cm X 15.2 cm) channel. The Channel Base 4.3" X 6" is 6" (15.2 cm) long X 2.7" (6.9 cm) high X 4.3" (10.7 cm) wide. The Channel Base 4.3” X 6" is designed specifically for shoring operations. It fits snugly over 100 MM X 100 MM shoring lumber where it can be anchored with screws or nails.



1-21. Channel Base 6” X 6"
Part Number 22-796136

r. **Channel Base 6” X 6".** The Channel Base 6” X 6" (Figure 1-21) is essentially a strut base cup secured to a 6” X 6" (15.2 cm X 15.2 cm) channel. The Channel Base 6" X 6" is 7" (17.7 cm) long X 2.7" (6.9 cm) high X 5-3/4" (14.6 cm) wide. The Channel Base 6” X 6" is designed specifically for shoring operations. It fits snugly over 6” X 6" shoring lumber where it can be anchored with screws or nails.



1-22. Channel Base Metric 6.3" X 7"
Part number 22-796133

s. **Channel Base 6.3” X 7".** The Channel Base 6.3” X 7" (Figure 1-22) is essentially a strut base cup secured to a 6.3” X 7" (16.0 cm X 17.7 cm) channel. The Channel Base 6.3" X 7" is 7" (17.7 cm) long X 3.7" (9.5 cm) high X 6.2" (15.8 cm) wide. The Channel Base 6.3” X 7" is designed specifically for shoring operations. It fits snugly over 150 MM X 150 MM shoring lumber where it can be anchored with screws or nails.

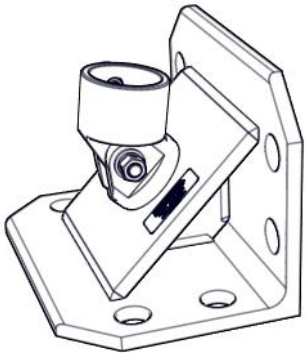


Figure 1-23. 45° Base
Part Number 22-796690

t. **45° Base.** The 45° Base (Figure 1-23) is an extruded 90° angle, with a plate weld at 45°, and a strut cup that can hinge 45° about the pivot pin axis , The 45° base is 8" (20.3 cm) X 8" (20.3 cm) X 12" (30.4 cm) long.

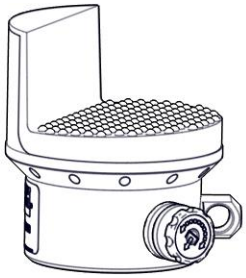


Figure 1-24 Angled Rubber Base (ESU)
Part Number 22-796266

u. **Angled Rubber Base.** The Angled Rubber Base (Figure 1-24) is "L" shaped to be applied to the edge of elevator or building floor. The "L" surface has rubber molded layer with bumps to prevent slippage.

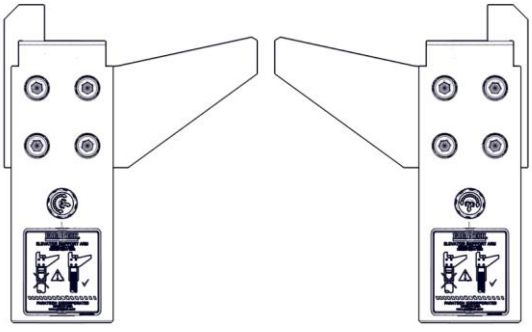


Figure 1-25 Elevator Support Left and Right Arm
Part Numbers 22-796260L and 22-796260R

v. **Elevator Support Left and Right Arm.** The Elevator Support Left and Right Arm (Figure 1-25) incorporate aluminum cantilever arm plate that fits between the wall and slots on both sides of the toe protection plate.

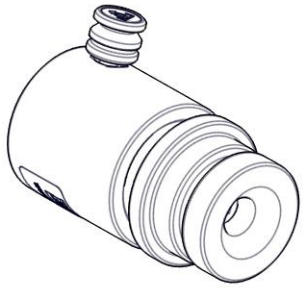


Figure1-26. Spring Loaded Connector
Part Number 22-796170

w. **Spring Loaded Connector.** The Spring Loaded Connector (Figure 1-26) was developed for use with LockStroke struts. The connector permits snug positioning of a LockStroke strut on a non-yielding surface and maintains strut compression even if a slight movement occurs. A coil spring with a travel length of approximately 1/2" (1.2 cm) is used to compensate for the space between the locking grooves on the LockStroke strut.

Figure 1-27. Adjustable Threaded Connector
Part Number 22-796160

x. **Adjustable Threaded Connector.** The Adjustable Threaded Connector (Figure 1-27) was developed for use with LockStroke struts under conditions where any forceful movement could be dangerous. The connector permits final "soft" positioning of a LockStroke strut on a non-yielding surface. A 1/2" (1.2 cm) threaded extension is used to finely adjust and compensate for the space between the locking grooves and LockStroke strut.

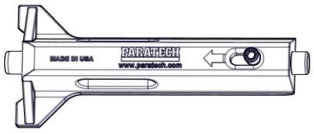


Figure 1-28. Waler Stop Block
Part Number 22-796285

y. W**aler Stop Block.** The Waler Stop Block (Figure 1-28) is an aluminum casting with a tool steel slide pin on one end and a fixed stainless steel pin on the other end and it allows the attachment of 6" (15.2 cm) end plates to the Waler Rail extrusion.

Figure 1-29. Waler Rail 6 ft & 8 ft
Part Numbers 22-796281 & 22-796283

z. **Waler Rail.** The Waler Rail 6 ft PN 22-796281 & 8 ft PN 22-796283 (Figure 1-29) The Waler Rail is an Extruded piece of aluminum and is compatible to an 8” x 8” piece of lumber at set lengths. The Waler rails are available in 6’ and 8’ lengths and have a series of holes in each side that will accept a stop block so bases can be put in different positions as needed, the Waler rail also have holes in the back so that it can be nailed to the wood if needed. The waler rails can also be joined with a Waler connector to make one long Waler.

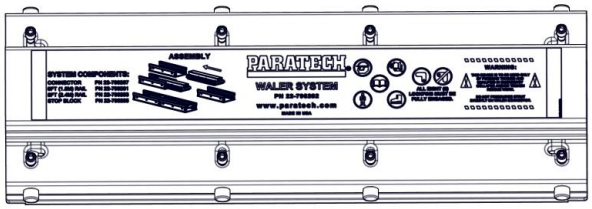
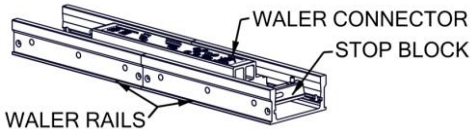


Figure 1-30 Waler Connector
Part Number 22-796287

aa. **Waler Connector.** The Waler Connector (Figure1-30) is used with the Waler Rail, connecting two Waler Rails together to form one long Waler Rail.



Example of Waler Rails connected with Waler Connector and Stop Block inserted into a Waler Rail

1-4 <u>RELATIONSHIP OF UNITS.</u>

Refer to figures 1-1 through 1-3 for pictorial illustrations of the LockStroke strut, the AcmeThread strut and the Low Clearance Support respectively.

1-5 **REFERENCE DATA.**

Reference data pertaining to RSS components are summarized for quick reference in Table 1-1.

Table 1-1. Reference Data

Manufacturer……...Paratech Incorporated
1025 Lambrecht Road
Frankfort, Illinois 60423-1648
GAGE Code……....30978

LOCKSTROKE STRUT SUPPORTS
- 19" - 25" (49 cm - 63 cm) Strut
  - Part Number……22-796006
  - Stroke……6" (15.2 cm)
  - Net Weight……...12.7 lb (5.8 kg)
- 25" - 36" (64 cm - 91 cm) Strut
  - Part Number……22-796000
  - Stroke……..11" (27.9 cm)
  - Net Weight……...16.5 lb (7.5 kg)
- 37" - 58" (94 cm - 147 cm) Strut
  - Part Number…….....22-796002
  - Stroke……...21" (53.3 cm)
  - Net Weight……24.0 lb (10.9 kg)
- 55" - 89" (140 cm - 226 cm) Strut
  - Part Number……22-796004
  - Stroke……..…34" (86.3 cm)
  - Net Weight……..35.7 lb (16.2 kg)

ACMETHREAD STRUT SUPPORTS
- 12" - 15" (31 cm - 38 cm) Strut
  - Part Number……22-796212
  - Stroke……...3" (7.6 cm)
  - Net Weight……..6.6 lb (3.0 kg)
- 19" - 25"(48 cm - 63 cm) Strut
  - Part Number……22-796206
  - Stroke……6" (15.2 cm)
  - Net Weight……11.2 lb (5.1 kg)
- 25" - 36" (64 cm - 91 cm) Strut
  - Part Number……22-796200
  - Stroke……....11" (27.9 cm)
  - Net Weight……...14.9 lb (6.8 kg)
- 37" - 58" (94 cm - 147 cm) Strut
  - Part Number……...22-796202
  - Stroke……..……21" (53.3 cm)
  - Net Weight……..……22.4 lb (10.2 kg)
- 56" - 88" (143 cm - 223 cm) Strut
  - Part Number……22-796204
  - Stroke……..……32" (81.2 cm)
  - Net Weight……..32.6 lb (14.8 kg)

STRUT EXTENSIONS
- 6" (15 cm) Extension, Total Length .....10" (25.4 cm)
  - Part Number…...22-796017
  - Nominal Diameter……..…Ø3" (Ø7.6 cm)
  - Net Weight……...…3.8 lb (1.8 kg)
- 12" (30 cm) Extension, Total Length.....16" (40.6 cm)
  - Part Number……...…….22-796012
  - Nominal Diameter……Ø3" (Ø7.6 cm)
  - Net weight……....4.6 lb (2.1 kg)
- 24" (61 cm) Extension, Total Length.....28" (71.1 cm)
  - Part Number…….....22-796024
  - Nominal Diameter……Ø3" (Ø7.6 cm)
  - Net weight……...7.1 lb (3.3 kg)
- 36" (91 cm) Extension, Total Length ...40" (101.6 cm)
  - Part Number……22-796036
  - Nominal Diameter……Ø3" (Ø7.6 cm)
  - Net weight……....9.7 lb (4.4 kg)

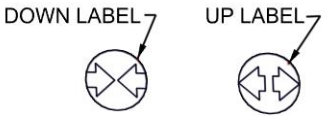
Extension Converter
- Part Number……22-796035
- Nominal Diameter……Ø3" (Ø7.6 cm)
- Net weight……...2.8 lb (1.3 kg)

LOW CLEARANCE SUPPORT
- 1" (2.6 cm) Rigid Strut, Total Length ....4" (10.1 cm)
  - Part Number……...22-796031
  - Nominal Diameter……Ø3" (Ø7.6 cm)
  - Net weight……...3.6 lb (1.7 kg)
- 3" (7.7 cm) Rigid Strut, Total Length ....6" (15.2 cm)
  - Part Number……....22-796032
  - Nominal Diameter……Ø3" (Ø7.6 cm)
  - Net weight……...5.0 lb (2.3 kg)
- 5" (12.7 cm) Rigid Strut, Total Length...8" (20.2 cm)
  - Part Number……....22-796033
  - Nominal Diameter……Ø3" (Ø7.6 cm)
  - Net weight……...6.4 lb (2.9 kg)
- 7" (17.8 cm) Rigid Strut, Total Length .10" (25.4 cm)
  - Part Number……....22-796034
  - Nominal Diameter……Ø3" (Ø7.6 cm)
  - Net weight……...7.7 lb (3.5 kg)

1-6 **EQUIPMENT, ACCESSORIES AND DOCUMENTS SUPPLIED.**

1-6.1 **EQUIPMENT SUPPLIED.** Data pertaining to the dimensions and weight of the basic RSS are presented in Table 1-1

1-6.2 **ACCESSORIES SUPPLIED.** No accessories are supplied with RSS. However, the following accessories are designed for use with and are required to obtain full utilization of the LockStroke and AcmeThread Strut Systems:



Labels used on all controllers.
"UP" = Extend "DOWN" = Retract

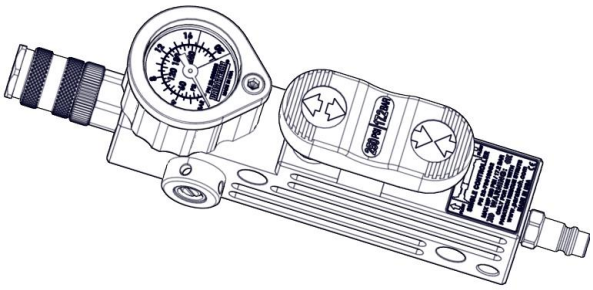


Figure 1-31A. Single Strut Controller G2
Part Number 22-796100G2

a. **Single Strut Controller G2.** The Single Strut Controller G2 (Figure 1-31A) is a single input/single output controller incorporating quick disconnect hose fittings single rocker lever to apply "UP" and release "DOWN" air pressure to strut. A pressure gauge is provided to monitor the air pressure applied to the strut and a 250 psi (17.2 bar) relief valve is incorporated to limit the applied air pressure.

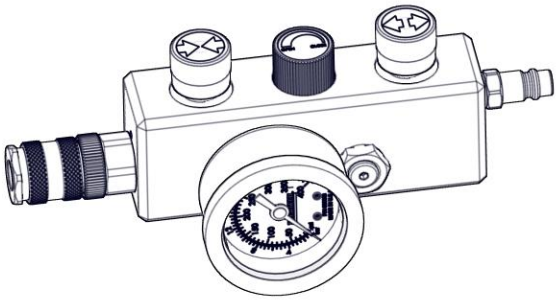


Figure 1-31B Single Strut Controller
Part Number 22-796100

b. **Single strut controller.** The Single Strut Controller (Figure 1-31B) is a single input/single output controller incorporating quick disconnect hose fittings two pushbuttons to apply "UP" and release "DOWN" air pressure to strut and a bypass valve to permit constant air flow to the strut. A pressure gauge is provided to monitor the air pressure applied to the strut and a 250 psi (17.2 bar) relief valve is incorporated to limit the applied air pressure.

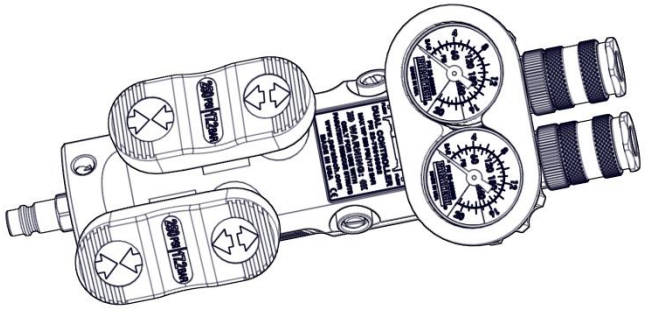
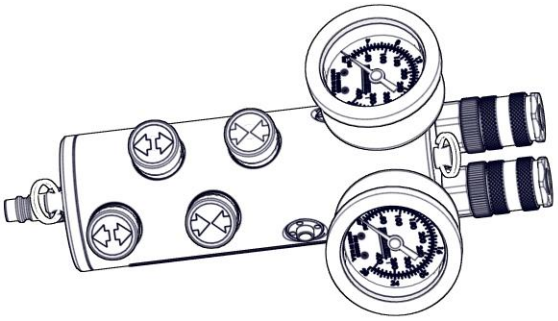


Figure 1-32A. Dual Deadman RSS Controller G2
Part Number 22-796103G2

c. **Dual Deadman RSS Controller G2.** The Dual Deadman RSS Controller G2 (Figure 1-32A) is a single input/dual output controller incorporating quick disconnect hose fittings and dual rocking levers to apply "UP" and release "DOWN" air pressure to either one or two struts. Two gauges are provided to monitor the air pressure provided to either one or two strut(s) and a 250 psi (17.2 bar) relief valve is incorporated to limit the applied air pressure. An adjustable strap permits attachment to the operator.



d. **Dual Deadman Strut Controller.** The Dual Deadman Strut Controller (Figure 1-32B) is a single input/dual output controller incorporating quick disconnect hose fittings and four pushbuttons to apply "UP" and release "DOWN" air pressure to either one or two struts. Two gauges are provided to monitor the air pressure provided to either one or two strut(s) and a 250 psi (17.2 bar) relief valve is incorporated to limit the applied air pressure. An adjustable strap permits attachment to the operator.

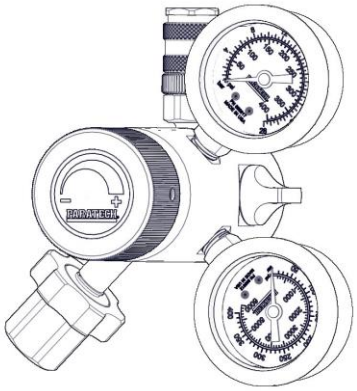


Figure 1-33. Regulator 300 psi CGA
Part Number 22-895400

e. **Regulator 300 psi CGA.** The Regulator 300 psi CGA (Figure 1-32) is a self-contained, direct-acting, pressure-reducing type designed primarily for use with a SCBA (self-contained breathing apparatus) air cylinder. Inlet pressure up to 5,500 psi (379.2 bar) are adjustable to constant working pressure up to 250 psi (17.2 bar). The pressure regulator is designed to mate with a CGA-346/347 adapter fitting.

Figure 1-34 Air Cylinder 3000 psi 80 cf and 13 cf
Part Number 800080 and 800013

f. **Air Cylinder 3000 psi 80 cf and 13 cf.** Two sizes of Air Cylinder 3000 psi (Figure 1-33) are available to pressurize the RSS: 13 cubic feet (0.3 cubic meters), 80 cubic feet (2.2 cubic meters). The flat bottom and stand-up design permits vertical mounting in a 30” (76.2 cm) compartment.

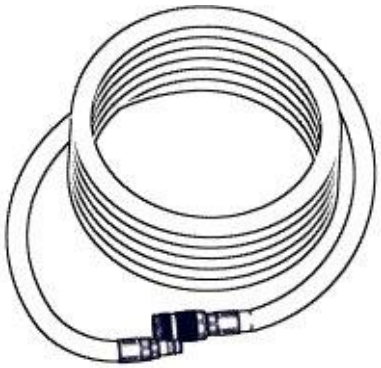


Figure 1-35 Hose X' Color W/Couplings
X' = Feet of Hose, Color = Color of Hose

g. Hose **X' Color W/Couplings.** Three lengths, each 3/8" (0.9 mm) inside diameter, of air supply hose in a variety of colors (refer to Table 1-3) with quick disconnect hose fittings provides the interconnection between the air supply and controller, and the controller and strut(s). The hose is designed for working pressure of 300 psi (20.6 bar) and a temperature of -40°F (-40°C) to +150°F (65.5°C).

Table 1-3. Air Supply Hoses

COLOR	16 FT (5M)	32 FT (10M)	50FT(15M)
Red	890516	890521	890541
Yellow	890515	890520	890542
Gray	890518	890525	890545
Blue	890514	890523	890543
Black	890513	890522	890546
Green	890517	890524	890544

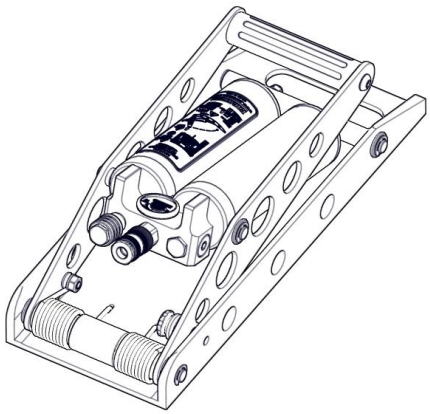


Figure 1-36 Manual Air Compressor
Part Number 22-800400

h. **Manual Air Compressor.** The Manual Air Compressor (Figure 1-35) has two cylinders, 48.8 cubic inch (800 cubic centimeter) provides a source of compressed air to extend strut(s). Incorporated on the compressor is a spring loaded foot pedal, a quick disconnect fitting and a sliding, two-stage valve collar to isolate one cylinder thereby increasing pressure and decreasing delivered volume by a factor of 2.

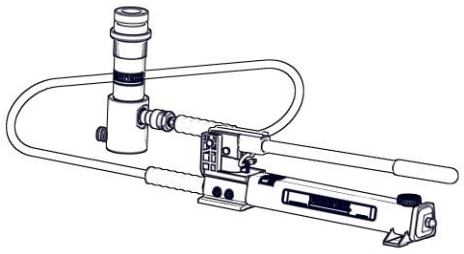


Figure 1-37 10T Hyd Cylinder W/Pump Complete
Part numbers: 22-796600 (4"), 22-796700 (6")
22-796800 (10")

i. **10T Hyd Cylinder W/Pump Complete.** The 10T Hyd Cylinder W/Pump Complete (Figure 1-36) is available with 4" (10.1 cm), 6" (15.2 cm) and 10" (25.4 cm) stroke. The cylinder is used as an extendable jacking device and is normally installed between extensions and base plates.

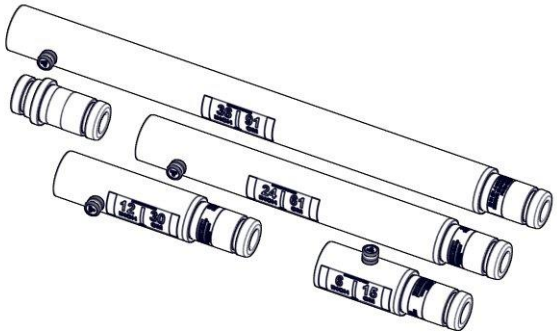


Figure 1-38 Strut Extension 6, 12, 24 and 36. Extension Converter 3" Strut
Part Numbers: 22-796017, 22-796012, 22-796024, 22-796036 and 22-796035

j. **Strut Extension 6, 12, 24 and 36. Extension Converter 3" Strut.** When combined with base plates and/or end plates, strut extensions function independently as rigid support devices. They also can be integrated with either LockStroke or AcmeThread Struts to add length. Struts are not designed to accept more than two extensions with a total combined length of 36" (91.4 cm). Refer to Table 1-1 and Figure 1-37.

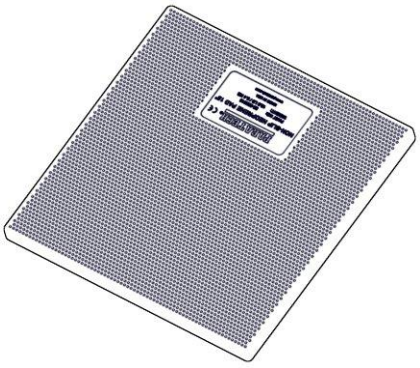


Figure 1-39 Non-Slip Neoprene Pad 15"
Part Number 22-890015

k. **Non-Slip Neoprene Pad 15".** The Non-Slip Neoprene Pad 15" (Figure 1-38) is 15" (38.1 cm) square x 1" (2.5 cm) thick Non-Slip Neoprene Pad 15" is used on smooth concrete and metal surfaces as well as where water and/or lubricants are present. The pad also eliminates a potential sparking condition in an explosive atmosphere by eliminating metal-to-metal contact in certain strut placements.

1-6.3 **DOCUMENTS SUPPLIED.** No documents other than this publication and OSHA1926.650 - 1926.652 subpart P regulations are required as supporting literature for the RSS.

2-1 **INTRODUCTION.**

The Rescue Support Systems are designed for use in rescue situations involving collapse, containment or stabilization. These situations include such diverse incidents as building collapse, structural containment, rescue from transportation accidents, industrial emergencies, and excavation collapse and containment.

The specific situation requiring use of a RSS will generally determine whether low clearance support(s) alone are required, whether LockStroke strut(s) or AcmeThread strut(s) alone are required, or whether supports are required to be utilized in combination with each other.

2-2 **PREPARATION FOR USE.**

2-2.1 **LOW CLEARANCE SUPPORT SYSTEM.**

a. Low Clearance Supports are pre-rescue devices that are used where support is required before rescue work can commence. Refer to paragraph 1-3.4 for the optional base plates available for use with Low Clearance Supports. Low Clearance fixed supports function in conjunction with close clearance lifting devices such as air bags, hydraulic or manual jacks.

b. Once the proper support configuration is determined and the individual components (rigid strut/extension and base(s) and/or base plug) selected it is only necessary to clean where required, the individual components sufficiently to clear them of any contamination that would prevent their full engagement and proper locking to each other. Refer to Table 2-1 for overall lengths of low clearance supports when used with various bases and extensions.

2-2.2 **LOCKSTROKE AND ACMETHREAD STRUT SYSTEMS.** (Refer to Figure 2-1 for Typical Hook-Up).

a. LockStroke Struts consist of extendable struts plus the optional base plates, refer to paragraph 1-3.4, and the strut extensions designated in paragraph 1-6.f. The LockStroke extendable strut automatically locks in increments of 0.400" (1 cm). This feature permits the comparatively coarse extension and hands free locking of the LockStroke support system from a remote location.

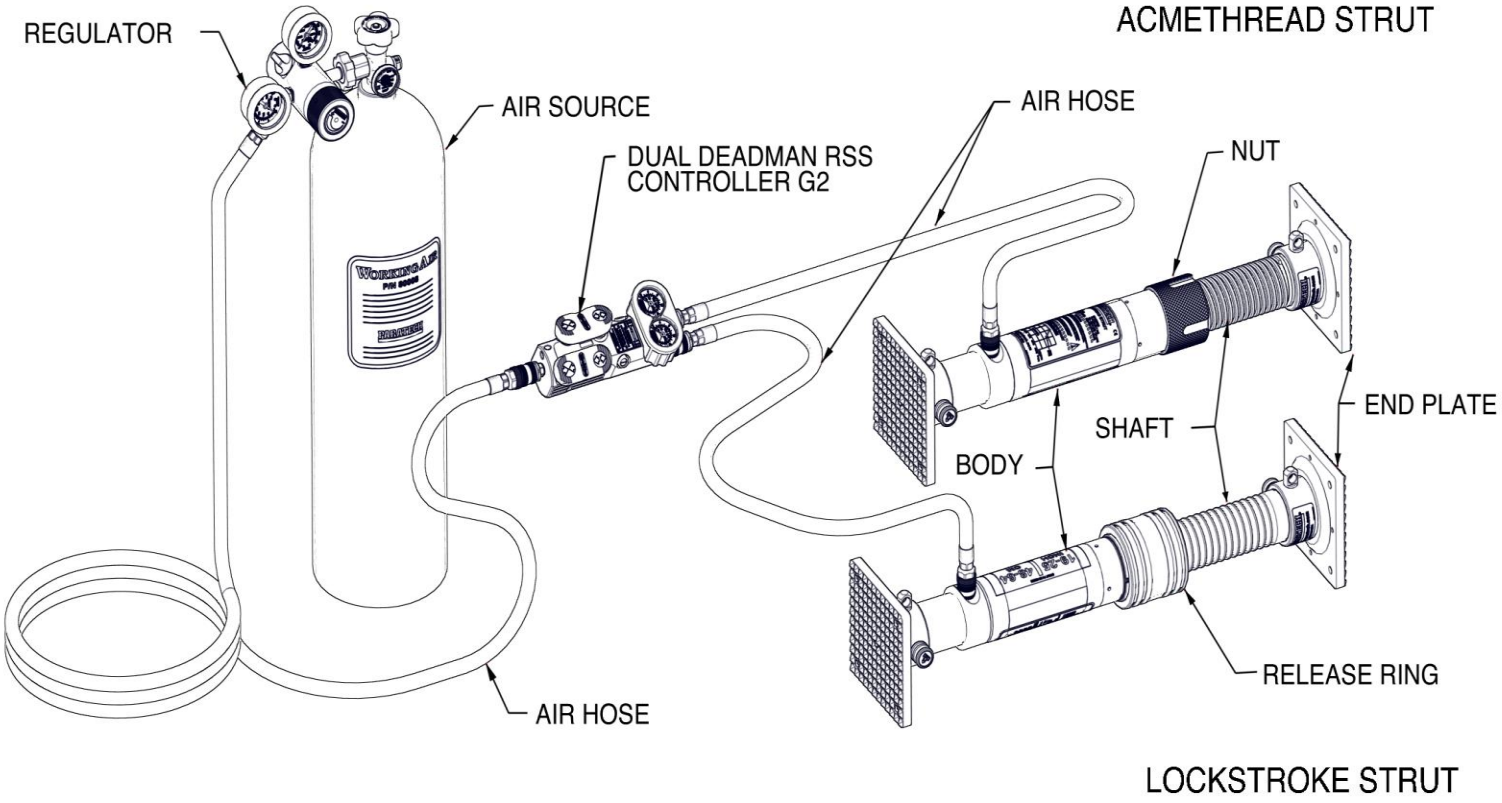
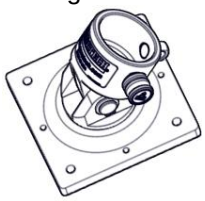
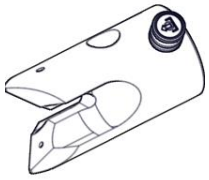
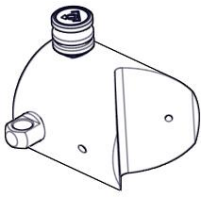
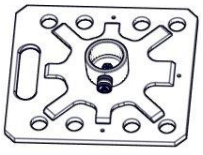
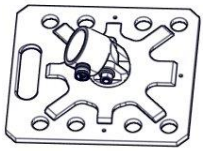


Figure 2-1. Typical Rescue Support System Hook-Up

Table2-1 Base, End Plate & Fittings Increase in Overall Length

BASE, END PLATES & FITTINGS	INCREASE IN OVERALL LENGTH
Rigid Base 6	1.0" (2.54 cm)
Hinged Base 6 	3.2" (8.10 cm)
Multi-Base 	4.2" (10.61 cm)
V-Base 	1.9" (4.64 cm)
Offset Cone Base	2.6" (6.55 cm)
Ridgid Base 12 	1.2" (2.89 cm)
Hinged Base 12 	3.4" (8.44 cm)

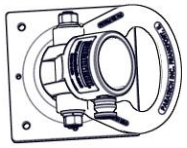
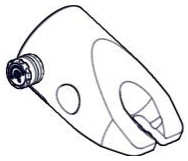
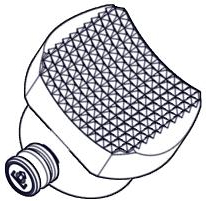
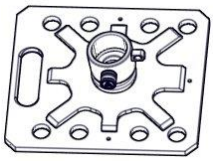
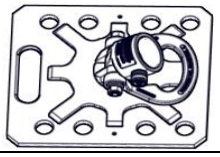
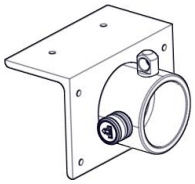
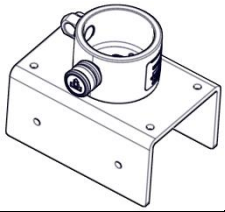
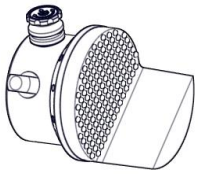
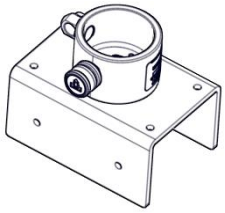
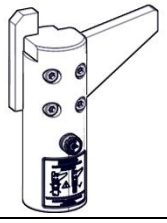
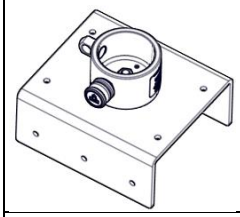
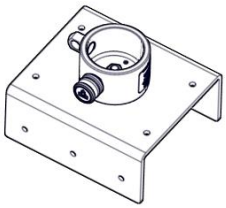
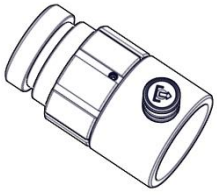
BASE, END PLATES & FITTINGS	INCREASE IN OVERALL LENGTH
Swivel Base 6	1.8" (4.48 cm)
Hinged Base 6 W/Anchor Ring 	3.2" (8.10 cm)
Chain Wedge For 3/8" Chain 	4.0" (10.16 cm)
Contour Base 	1.7" (4.16 cm)
Rubber Base 4"	2.8" (6.99 cm)
Swivel Base 12 	2.3" (5.78 cm)
Hinged Base 12 W/Anchor Ring 	3.4" (8.44 cm)

Table2-1 Base, End Plate & Fittings Increase in Overall Length

BASE, END PLATES & FITTINGS	INCREASE IN OVERALL LENGTH		BASE, END PLATES & FITTINGS	INCREASE IN OVERALL LENGTH
Angle Base 3" X 4" 	3.4" (8.58 cm)		45° Base	5.4" (13.89 cm)
Channel Base 4" X 4" 	3.4" (8.43 cm)		Angled Rubber Base (ESU) 	2.7" (6.67 cm)
Channel Base Metric 4.3" X 6" 	3.4" (8.43 cm)		Elevator Support Left & Right Arm 	6.0" (15.24 cm)
Channel Base 6" X 6" 	3.4" (8.43 cm)		Spring Loaded Connector	3.9" (9.85 cm)
Channel Base Metric 6.3" X 7" 	4.2" (10.51 cm)		Adjustable Threaded Connector 	3.5" (8.74 cm)

b. AcmeThread Struts consist of extendable struts plus the optional base plates, refer to paragraph 1-3.4, and the strut Extensions designated in paragraph 1-6.2.h. The design of AcmeThread Strut permits placement with sensitive "soft" positioning, and locking at an infinite number of extended positions within the range of the strut.

c. Once the proper support configuration is determined and the individual components (extendable strut, extension, if necessary, and base plates) selected, it is only necessary to clean, where required, the individual components (strut components in addition to pressurized components) sufficiently to clear them of any contamination that would prevent their full engagement and proper locking to each other.

WARNING

Do not use any accessory that exhibits an air leakage condition. Any reduction of air pressure could result in collapse and endangerment of personnel.

d. Depending upon the optional accessories being used, inspect the inlet and outlet fittings on the interconnecting hoses, Regulator 300 psi CGA, Single Strut ControllerG2/Dual Deadman RSS ControllerG2, Single Strut Controller/Dual Deadman Strut Controller and Manual Air Compressor/Air Cylinder 3000 psi for any damage that will permit air leakage. Do not use any accessory that exhibits an air leakage condition.

e. If using an optional Regulator 300 psi CGA, close the outlet shut-off valve assembly and turn the adjusting knob assembly full counterclockwise to close the internal needle valve (no flow through the pressure regulator).

f. If using an optional Single Strut ControllerG2/Dual Deadman RSS ControllerG2, Single Strut Controller/Dual Deadman Strut Controller depress the "DOWN" marking side of the rocking lever to prevent flow through the controller.

g. Connect the Regulator 300 psi CGA to the optional Air Cylinder 3000 psi. Be sure the hand tightening knob/nut on the Regulator 300 psi CGA is tightened sufficiently to prevent leakage.

h. Connect the desired length delivery hose to the Regulator 300 psi CGA outlet quick disconnect delivery coupling and the Single Strut Controller G2/ Dual Deadman RSS Controller G2, Single Strut controller/Dual Deadman strut controller inlet quick disconnect nipple. Be sure each quick disconnect mechanism is fully engaged and locked in position to assure a leak-free connection.

i. Connect one or two desired length delivery hose(s) to the Single Strut Controller G2/Dual Deadman RSS Controller G2, Single Strut Controller/Dual Deadman Strut Controller outlet quick disconnect delivery coupling(s). Be sure each quick disconnect mechanism is fully engaged and locked in position to assure a leak-free connection. Do not connect the LockStroke/ AcmeThread Strut(s) inlet quick disconnect delivery nipple(s) to the delivery hose(s) until complete configuration of the strut(s) is determined, the components assembled and the assembled strut is ready for placement.

2-3 CONTROLS AND INDICATORS.

2-3.1 **CONTROLS.** No controls are used on any components of any RSS. However the optional accessories required for use in conjunction with the RSS do contain the operational controls indicated below:

a. **Manual Air Compressor.** The only controls on the Manual Air Compressor are the foot lever used to deliver pressure and a sliding valve ring that permits isolating one of the two cylinders thereby increasing the delivered pressure and decreasing the delivered volume by a factor of 2.

b. **Air Cylinder 3000 psi.** The only control on the Air Cylinder 3000 psi is the shut-off valve that prevents the flow of compressed air.

c. **Regulator 300 psi CGA.** The only controls on the Regulator 300 psi CGA are the shut-off valve assembly and the pressure adjusting knob assembly. The shut-off is either open to permit regulated delivery air to pressurize the system or closed to prevent (seal off) regulated delivery air from pressurizing the system. The pressure adjustment knob is turned to control the delivery pressure up to 250 psi (17.2 bar) maximum.

d. **Single Strut Controller G2/Single Strut Controller.** The controls on the Single Strut Controller G2/Single Strut Controller are rocking levers or pushbuttons with "UP" and "DOWN" markings that can pressurize the strut to extend or release the pressure to collapse. A gauge is provide to monitor the air pressure provided to the strut. A 250psi (17.2 bar) relief valve is intergraded in the controller.

e. **Dual Deadman RSS Controller G2/Dual Deadman Strut Controller.** The only controls on the Dual Deadman Controller are the two, independent working rocking levers or push buttons with "UP and "DOWN" markings that can pressurize the strut to extend or release the pressure to collapse. Each rocking lever works independently for the left or right side, permitting the application and release of air to and from the struts. Two gauges are provided to monitor the air pressure provided to the strut. A 250psi (17.2 bar) relief valve is intergraded in the controller.

f. **10 Ton Hydraulic Cylinder and Hand Pump.** The only controls on the 10 ton hydraulic cylinder is the pump handle and the release valve.

2-3.2 **INDICATORS.** No indicators are used on any components of any RSS. However the optional accessories required for use in conjunction with the RSS do contain the operational controls indicated below:

a. **Regulator 300 psi CGA.** Two pressure gauges are provided: the supply pressure gauge and the delivery pressure gauge. The supply pressure gauge is marked in 1000 psi increments from 1000 psi to 6000 psi and is scribed each 100 psi. The supply pressure gauge is also marked each 50 bar from 50 bar to 400 bar and is scribed each 10 bar. The delivery pressure gauge is marked in 50 psi increments from 50 psi to 400 psi and is scribed each 10 psi. The delivery pressure gauge is also marked each 4 bar from 4 bar to 28 bar and is scribed each .5 bar.

b. **Single Strut Controller G2/Single Strut Controller.** The delivery pressure gauge is provided for the "UP"/"DOWN" control valve assemblies and bypass valve. The gauge is marked in 60 psi increments from 60 psi to 300 psi and is scribed each 10 psi/ The gauge is marked in 50 psi increments from 50 psi to 400 psi and is scribed each 10 psi. The pressure gauge is also marked each 4 bar from 4 bar to 21 bar and is scribed each 1 bar. The pressure gauge is also marked each 4 bar from 4 bar to 28 bar and is scribed each .5 bar.

c. **Dual Deadman RSS Controller G2/Dual Deadman Strut Controller.** Two delivery pressure gauges are provided: one associated with each "UP"/"DOWN" control valve assembly: one therefore each of two struts. Each gauge is marked in 60 psi increments from 60 psi to 300 psi and is scribed each 10 psi/ Each gauge is marked in 50 psi increments from 50 psi to 400 psi and is scribed each 10 psi. Each gauge is also marked in 4 bar increments from 4 bar to 21 bar and is scribed each 1 bar/ The pressure gauge is also marked each 4 bar from 4 bar to 28 bar and is scribed each .5 bar.

.d. **Manual Air Compressor.** A delivery pressure gauge is provided on the Manual Air Compressor. The gauge is marked in 20 psi increments from 0 psi to 200 psi and is scribed each 2 psi. The pressure gauge is also marked each 200 kPa from 0 to 1400 kPa and is scribed each 20 kPa.

e. **Working Air Cylinder.** A supply pressure gauge is provided on the Working Air Cylinder. The gauge is marked in 1000 psi increments from 0 psi to 4000 psi.

2-4 **NORMAL OPERATING PROCEDURE.**

2-4.1 **LOW CLEARANCE SUPPORTS.**

a. Determine the proper support configuration and select the individual components (Rigid Strut and base(s) and or base plug) necessary to achieve the desired configuration and height. Refer to Table 2-1 for examples of possible support configurations.

b. Pull out the lock pin assembly knob on the selected base plate to retract lock pin. Fully engage the components and then release the knob to lock the components together.

c. If required, secure the base plate(s) with nails, screws or bolts to any wood blocking being used.

d. Place the low clearance support in the desired position between the surfaces to be held apart and repeat steps a., b. and c. until all low clearance supports are in position and the close clearance device(s) such as air bags, hydraulic or manual jacks can be reposition/ removed in preparation for placement of additional low clearance supports.

2-4.2 **LOCKSTROKE AND ACMETHREAD STRUTS.**

a. Determine the proper support configuration and select the individual components (LockStroke and/or AcmeThread struts, strut extensions and base plates) necessary to achieve the desired configuration and height/ extension. Refer to Figure 2-1 for examples of the possible strut configurations.

b. Pull out the lock pin assembly knob on the selected base plate to retract the lock pin. Fully engage the components and then release the knob to lock the components together.

c. If required, secure the base plate(s) with nails, screws or bolts to any wood blocking being used.

d. Place the LockStroke strut or AcmeThread strut in the desired position between the surfaces to be held apart. If a safe and stable condition exists, manually extend the strut until the base plates are in contact with the surfaces to be held apart. If an unstable condition exists, permit air pressure to extend the strut.

e. If a compressed air cylinder is being used, slowly open the air cylinder supply to the pressure regulator and follow steps f. through k. The supply pressure will be indicated on the air cylinder as well as the pressure regulator supply pressure gauge. If a manual compressor is being used, interconnect the manual compressor and LockStroke strut/ AcmeThread strut.

WARNING

Do not adjust the pressure regulator to exceed the maximum pressure rating of any component in the system apparatus.

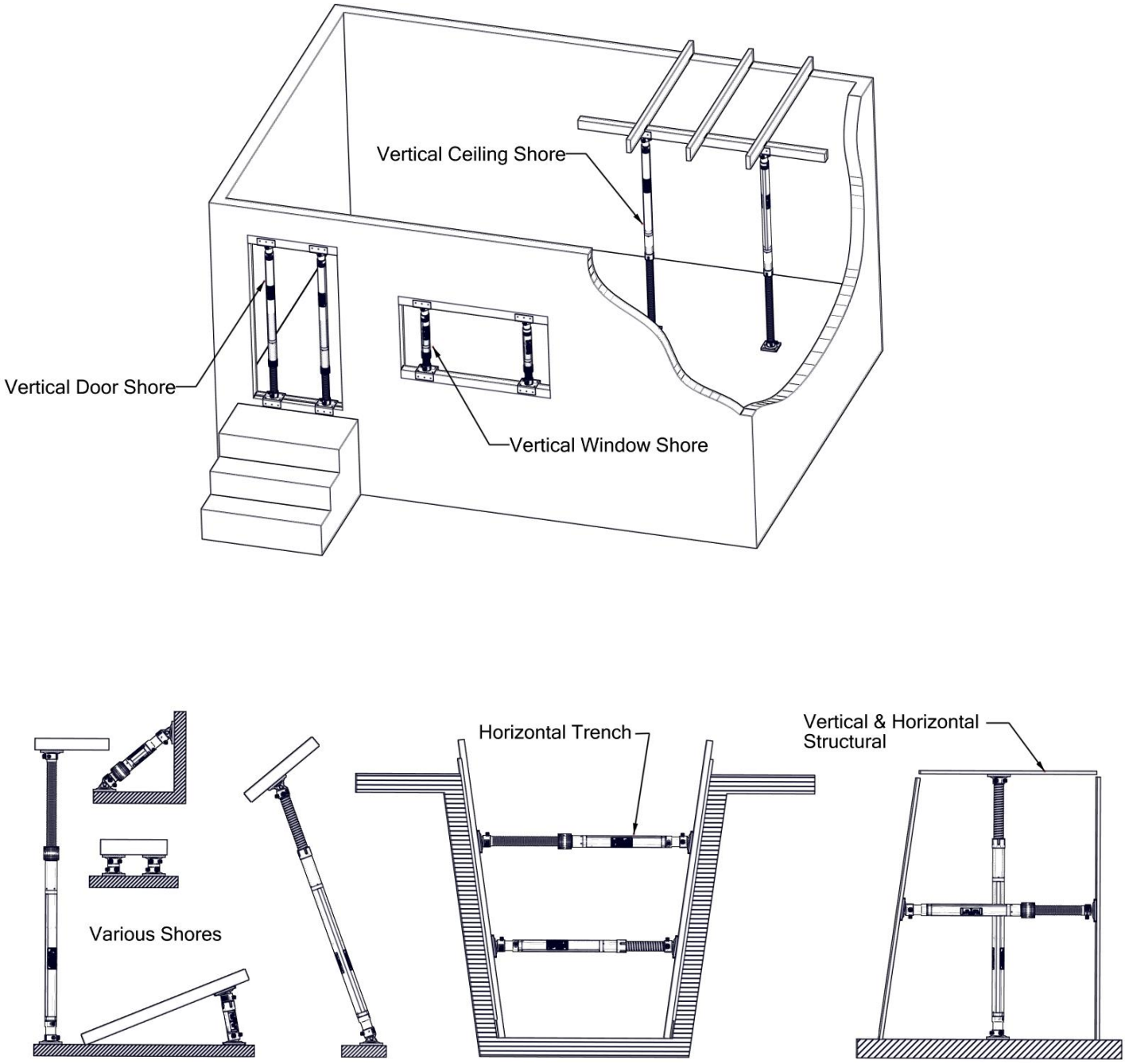


Figure 2-2 Typical Rescue Support System Applications

f. Slowly turn the pressure adjusting knob on the Regulator 300 psi CGA to obtain the desired regulated pressure to the Single Strut/G2 Controller/Dual Deadman/G2 Controller as well as the LockStroke Strut/AcmeThread Strut. Make the final adjustment in the increase direction to provide the most accurate and consistent pressure settings.

g. Open the delivery shut-off valve assembly on the Regulator 300 psi CGA to supply delivery air to the Single Strut Controller G2/Dual Deadman RSS Controller G2, Single Strut Controller/Dual Deadman. The delivery pressure should indicate the regulated pressure set in preceding step f.

h. **For a LockStroke Strut.** Slowly press the green "UP" pushbutton or rocking lever on the Single Strut Controller G2/ Dual Deadman RSS Controller to slowly extend the LockStroke Strut. If rapid, forcible extension of the LockStroke Strut is desired, press the "UP" pushbutton or rocking lever fully and hold down. The strut will lock in .4" (1.0 cm) increments as it extends. Press the red "DOWN" pushbutton or rocking lever to release air pressure from the strut. When the gauge on the reads "0" you can disconnect the outlet line/s to the strut.

i. **For an AcmeThread Strut.** Slowly press the green "UP" pushbutton on the Single Strut Controller G2/Dual Deadman RSS Controller G2, Single Strut Controller/Dual Deadman Strut Controller to slowly extend the AcmeThread Strut. If rapid, forcible extension of the AcmeThread Strut is desired press the "UP" pushbutton or rocking lever fully and hold down. The threaded portion of the strut and collar will extend and the base plates will exert force ("bite") against the work surfaces. When the strut is extended to its constrained length, manually turn the collar down the acme threaded shaft until it contacts the outer tube in order to lock the strut in its extended position. Press the red "DOWN" pushbutton or rocking lever to release air pressure from the strut. When the gauge on the Controller reads "0" you can disconnect the outlet line/s to the strut.

j. Repeat steps a. through i. until all LockStroke Struts or AcmeThread Struts are in position.

k. The air delivery line to the Regulator 300 psi CGA will still have pressure in the line. To disconnect this line refer to 2-6 shutdown

2-5 **TAKEDOWN.**

a. **For a LockStroke Strut.** Take down and repositioning is accomplished by removing the load pressure and then manually operating the release ring to permit collapsing of the strut. If during takedown a load shift begins to forcibly collapse the strut, simply letting go of the release ring will again lock the strut in the extended position at the time the release ring was released.

b. **For an AcmeThread Strut.** Takedown and repositioning is accomplished by removing the load pressure and then manually turning the nut up the inner shaft. If during release, a load shift begins to forcibly collapse the strut, simply releasing the nut will again lock the strut in the extended position where the nut was released.

c. **Bound Strut(s).** On occasion, load pressure may prevent either one or more LockStroke or AcmeThread Strut(s) from being taken down (Figure 2-3A). When this occurs, an evaluation must be made to determine the safety of such removal. Before removing a bound strut(s) determine whether the bound strut(s) should be replaced with a more permanent strut(s) such as a timber or a metal beam. If so, and safety will not be compromised, cut the permanent strut(s) to the proper replacement size. Then assemble a "takedown" strut using a combination of LockStroke or AcmeThread Strut(s), extension(s) and a hydraulic cylinder that will fit next to the strut to be removed (Figure 2-3B). Extend the hydraulic cylinder until the bound strut can be removed (Figure 2-3C and the permanent strut (timber or metal beam) inserted in its place (Figure 2-3D). Lower the hydraulic cylinder until the load rests on the permanent strut (Figure 2-3E). Repeat this procedure for each bound strut.

2-6 **SHUTDOWN.**

a. At the conclusion of use, close the Air Cylinder 3000 psi supply valve.

b. Bleed outlet hose/s going to the strut/s from the Controller. Press the red "DOWN" pushbutton/s or rocking lever on controllers until the gauge reads "0".

c. Disconnect outlet hose/s to the strut from the Controller.

d. **PUSHBUTTON STYLE:** Bleed the Regulator 300 psi CGA and the inlet hose by pushing the green "UP" and red "DOWN" pushbuttons on the Single Strut Controller/Dual Deadman Strut Controller at the same time until the gauges on the Regulator 300 psi CGA reads "0".

e. **ROCKER STYLE:** Bleed the Regulator 300 psi CGA and the inlet hose by pushing the green "UP" on the rocking lever for the Single Strut Controller G2/Dual Deadman RSS Controller G2 the (outlet coupling is an open coupling) until the gauges on the Regulator 300 psi CGA reads "0".

f. Disconnect the air inlet hose from the Controller and the Regulator 300 psi CGA.

g. Disconnect the Regulator 300 psi CGA from Air Cylinder 3000 psi

h. Perform the after use maintenance specified in Chapter 3

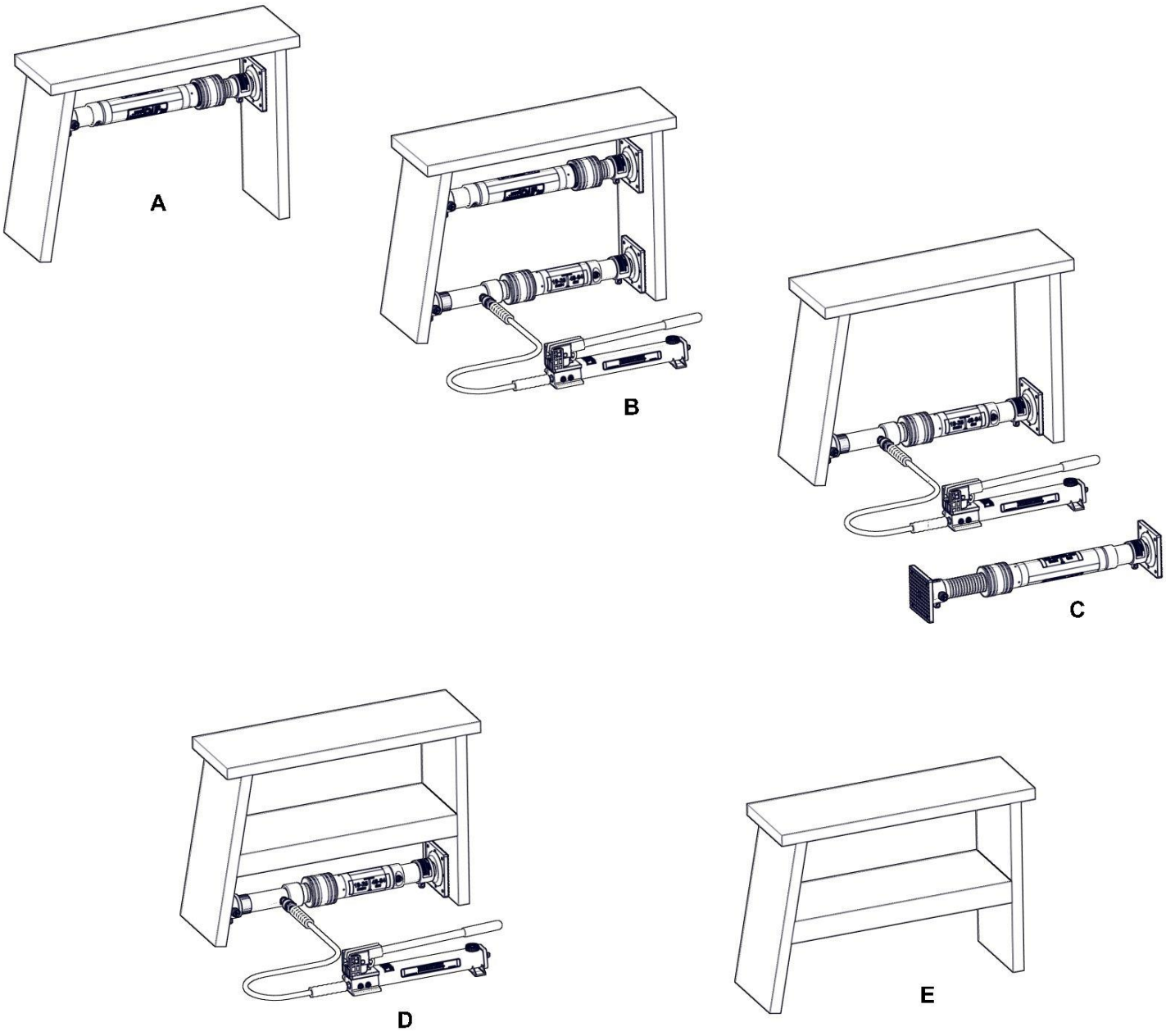


Figure 2-3 Bound Strut Removal

2-7. **CAPACITIES AND SAFETY LIMIT CHARTS.**

2-7.1 **ACTIVATION FORCE.** The LockStroke and AcmeThread Struts have an axial crush strength in excess of 50,000 pounds (22,680 kg). When pneumatically activated, the struts will exert the forces in Table 2-3.

Table 2-3. Activation Force

Activation Pressure PSI (Bar)	Force Lb (kg)
50 (3.5)	245 (112)
100 (6.9)	491 (223)
150 (10.4)	736 (334)
200 (13.8)	982 (446)
250 (17.3)	1227 (557)

2-7.2 **SPACING CHARTS.** When used as horizontal struts for trench collapse work (All Figures are Compiled using a 4:1 Safety Factor), refer to Tables 2-4 through 2-6 to determine maximum spacing.

Table 2-4. Trench Work Collapse Spacing Chart
Type A - 25 Soils

AcmeThread and LockStroke Struts Only

Trench Depth (ft)	Trench Width (ft)	Horizontal Spacing (ft)	Vertical Spacing (ft)
4 to 8	Up to 4	8	4
	4 to 8	8	4
	8 to 12	4	4
	12 to 16	4	4
8 to 12	Up to 4	8	4
	4 to 8	8	4
	8 to 12	4	4
	12 to 16	2	2
12 to 16	Up to 4	8	4
	4 to 8	6	4
	8 to 12	4	4
	12 to 16	2	2
16 to 20	Up to 4	8	4
	4 to 8	6	4
	8 to 12	3	2
	12 to 16	2	2

Table 2-5. Trench Work Collapse Spacing Chart
Type B - 45 Soils

AcmeThread and LockStroke Struts Only

Trench Depth (ft)	Trench Width (ft)	Horizontal Spacing (ft)	Vertical Spacing (ft)
4 to 8	Up to 4	8	4
	4 to 8	6	4
	8 to 12	2	4
	12 to 16	2	2
8 to 12	Up to 4	6	4
	4 to 8	4	4
	8 to 12	3	2
	12 to 16	2	2
12 to 16	Up to 4	6	4
	4 to 8	4	4
	8 to 12	2	2
	12 to 16	NA	NA
16 to 20	Up to 4	2	2
	4 to 8	2	2
	8 to 12	NA	NA
	12 to 16	NA	NA

Table 2-6. Trench Work Collapse Spacing Chart
Type C - 60 Soils

AcmeThread and LockStroke Struts Only

Trench Depth (ft)	Trench Width (ft)	Horizontal Spacing (ft)	Vertical Spacing (ft)
4 to 8	Up to 4	6	4
	4 to 8	4	4
	8 to 12	2	2
	12 to 16	2	2
8 to 12	Up to 4	4	4
	4 to 8	3	4
	8 to 12	NA	NA
	12 to 16	NA	NA
12 to 16	Up to 4	3	4
	4 to 8	2	4
	8 to 12	NA	NA
	12 to 16	NA	NA
16 to 20	Up to 4	2	4
	4 to 8	2	2
	8 to 12	NA	NA
	12 to 16	NA	NA

NOTE: A strut must be within 2 ft (0.6 m) of the top and bottom of the trench. Use 150 PSI (10.3 Bar) installation pressure for Table 2-4 (Type A Soils). Use 200 PSI (13.8 Bar) installation pressure for Table 2-5 (Type B Soils). Use 200 PSI (13.8 Bar) installation pressure for Table 2-6 (Type C Soils).

2-7.3. **LOAD CHART.** Each strut, depending on its length has a maximum axial working load capacity of 20,000 pounds (9072 kg) to 3,500 pounds (1588 kg). When used for collapse/rescue stabilization, refer to Table 2-7 for capacity by length of strut.

Table 2-7. Collapse/Rescue Working Load Chart

Length of Strut ft (cm)	Working Load lb (kg)
2 (61)	20000 (9072)
3 (92)	20000 (9072)
4 (122)	20000 (9072)
5 (153)	16551 (7508)
6 (183)	14125 (6407)
7 (214)	13081 (5934)
8 (244)	12025 (5455)
9 (275)	9138 (4145)
10 (305)	5360 (2432)
11 (336)	3932 (1784)
12 (366)	3830 (1738)

NOTE: As the length of the strut increases, the working load decreases due to the ratio of the diameter to the length.

3-1 **INTRODUCTION.**

The major components of the RSS and accessories require little maintenance to ensure optimum performance. This chapter provides preventive maintenance procedures.

3-2 **MAINTENANCE PLAN.**

Preventive maintenance of the RSS is accomplished in accordance with the RSS maintenance schedule, Table 3-1.

3-3 **GENERAL MAINTENANCE.**

3-3.1 **GENERAL.**

General maintenance shall be performed as detailed in this chapter using the maintenance schedule in Table 3-1. This chapter will provide the step-by-step procedures that are necessary to verify that the RSS and its accessories are operating satisfactory.

3-3.2 **SURFACE CLEANING.**

a. Keep the exterior of all components clean of all dirt, grit, oil and grease accumulations. Wipe exterior surfaces with lint-free cotton machinery wiping towel lightly dampened with clean water. Then dry the surfaces thoroughly with a clean, dry lint-free cotton machinery wiping towel or low pressure compressed air. Compressed air may be used for cleaning in less accessible areas.

3-3.3 **INSPECTION**

a. Do not paint any of the RSS components. Check for loose hardware and cracked or deformed parts. Check for O-ring seal leakage while the system is pressurized.

b. During operation, verify the delivery pressure gauge(s) reads a relatively constant pressure regardless of the inlet pressure and flow rate. Also check for air leakage around any connection or a main housing fitting. Any leakage of air at these mating interfaces denotes either a loose connection or a defective O-ring seal that necessitates replacement.

c. If during the last three (3) months struts and ancillary equipment have not been used for training or collapse incidents they should be field tested to ensure they do not leak and are fully operational in preparation for their next use.

3-3.4 **LOCKING PIN ASSEMBLY REPLACEMENT.**

To replace the locking pin assembly, pull up the locking pin knob to expose the bonnet. Use a 5/8" wrench on the bonnet hex and unscrew the defective locking pin assembly. Thread in by using a 5/8" wrench on the bonnet of the replacement locking pin assembly, fully tighten the locking pin assembly.

Table 3-1. Maintenance Schedule

Frequency	Maintenance Requirement	Applicable Paragraph
During Use	Visually inspect struts and components for defects and calibration. Check for audible air leakage from struts and components.	3-3.3
After Use	Clean all dust, dirt, oil and grease from the RSS components and accessories. If cleaned with soap and water solution, lubricate o-rings/seals with grease and lock pins/couplings with WD40.	3-3.2
Quarterly	If not used periodically for training or incidents, the full complement of equipment shall be field tested to ensure its integrity and flawless operational capability. If the struts are stored horizontally then turn threaded shaft to prevent flat spotting the cup seal.	2-4

CHAPTER 4
PARTS LIST

4-1 **INTRODUCTION.**

This chapter lists available standard and optional parts for the LockStroke Strut, AcmeThread Strut and Rigid Strut. The parts list is used to identify and locate all repair parts, including all attaching hardware supplied. The parts should be ordered by part numbers when ordered from Paratech Incorporated 1025 Lambrecht Road, Frankfort, Illinois 60423-1648.

4-2 **LIST OF MAJOR COMPONENTS.**

The LockStroke Strut, AcmeThread Strut and Rigid Strut are comprised essentially of detail parts and contain no major components.

4-3 **PARTS LIST TABLES.**

The LockStroke Strut, AcmeThread Strut and Rigid Strut parts are listed in Tables 4-1 through 4-4. The tables contain five columns which are described below:

4-3.1 **FIGURE AND INDEX NUMBER COLUMN.**
This column shows the figure and index number of each part listed. Tables 4-1 through 4-4 relate to the illustrations contained in chapter 4. The index numbers which identify the individual parts are separated from the figure number by a hyphen. Index numbers run consecutively.

4-3.2 **DESCRIPTION COLUMN.** The DESCRIPTION column describes each part (by noun names and modifiers) in sufficient detail for clarity. Descriptions are successively intended to the right to show assembly and part relationship.

4-3.3 **QUANTITY COLUMN.** Quantities specified in the QUANTITY column are total number of each part required per assembly.

4-3.4 **CAGE COLUMN.** The assembly and parts are identified by a five digit code. These code numbers are in accordance with Federal Supply Cataloging Handbook H-4-1. A cross reference between the codes and the manufacture's is shown in Table 4-5.

4-3.5 **PART NUMBER COLUMN.** The part number column contains an identifying number for each part listed. Vendor’s numbers are shown where applicable.

4-4 **LIST OF MANUFACTURERS.**

A list of all manufacture's code numbers used in the parts list shown in Table 4-5. These codes are in accordance with Federal Supply Cataloging Handbook H-4-1.

Table 4-1. LockStroke Strut Parts List

Figure and Index Number	Description	Quantity	Part Number	CAGE
4-1	LOCKSTROKE STRUT 19-25	1	22-796006	3078
4-1	LOCKSTROKE STRUT 25-36	1	22-796000	3078
4-1	LOCKSTROKE STRUT 37-58	1	22-796002	3078
4-1	LOCKSTROKE STRUT 55-89	1	22-796004	3078
-1	TUBE END ADAPTER, STRUT	1	22-796067	3078
-2	NIPPLE STRUT INLET 1/8"NPSM	1	22-796065	3078
-3	O-RING 3MM X 63MM BN70	1	22-796051	3078
-4	TUBE DET. FOR 19" L.S. STRUT	1	22-796045	3078
-4	TUBE DET. FOR 25" L.S. STRUT	1	22-796046	3078
-4	TUBE DET. FOR 36" L.S. STRUT	1	22-796047	3078
-4	TUBE DET. FOR 55" L.S. STRUT	1	22-796048	3078
-5	TAPE REFL YELLOW 1"	4	22-796085	3078
-6	LABEL, SIZE FOR 796006 STRUT	1	22-LBL006	3078
-6	LABEL, SIZE FOR 796000 STRUT	1	22-LBL000	3078
-6	LABEL, SIZE FOR 796002 STRUT	1	22-LBL002	3078
-6	LABEL, SIZE FOR 796004 STRUT	1	22-LBL004	3078
-7	LABEL FOR 796006 LS STRUT	1	22-796006L	3078
-7	LABEL FOR 796000 LS STRUT	1	22-796000L	3078
-7	LABEL FOR 796002 LS STRUT	1	22-796002L	3078
-7	LABEL FOR 796004 LS STRUT	1	22-796004L	3078
-8	RELEASE RING, LOCKSTROKE	1	22-796128	3078
-9	SPRING, LOCKSTROKE STRUT	1	22-796132	3078
-10	HOUSING RING, LOCKSTROKE	1	22-796122	3078
-11	PRESSURE RING, LOCKSTROKE	1	22-796124	3078
-12	BALL 11/32 440-C SS GRADE 25	36	22-796193	3078
-13	UNLOCKING RING, LOCKSTROKE	1	22-796126	3078
-14	SEAL 2.5"O.D 2.125"I.D X 3/16	1	22-796018	3078
-15	GROOVED SHAFT FOR 19-25 STRUT	1	22-796055	3078
-15	GROOVED SHAFT FOR 25-36 STRUT	1	22-796056	3078
-15	GROOVED SHAFT FOR 36-57 STRUT	1	22-796057	3078
-15	GROOVED SHAFT FOR 55-89 STRUT	1	22-796058	3078

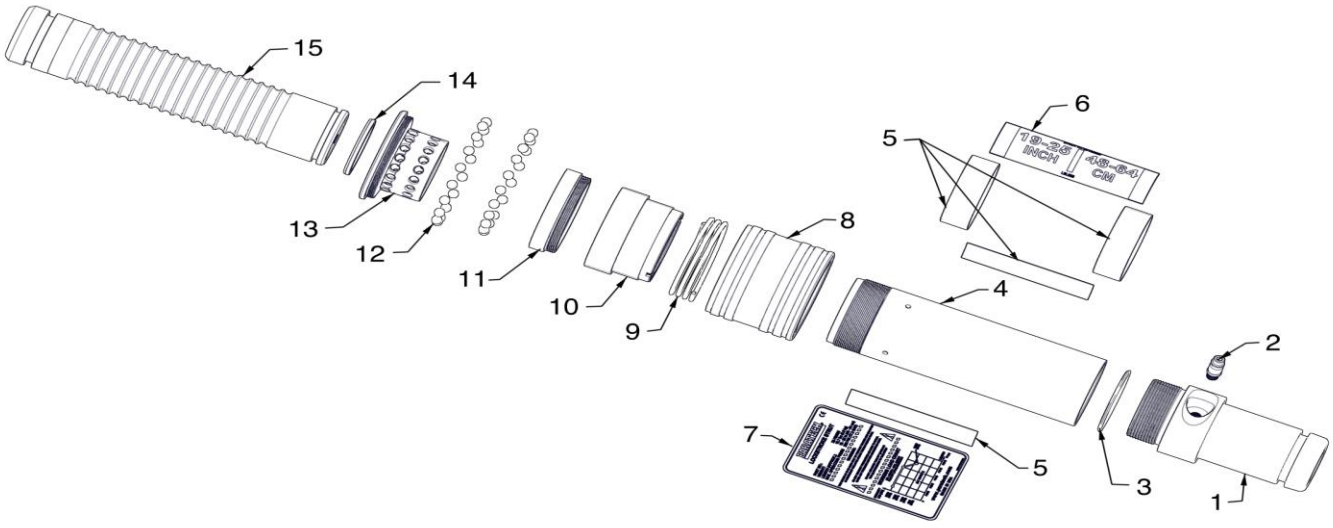


Figure 4-1 LockStroke Strut, Exploded View

Table 4-2. AcmeThread Strut Parts List

Figure and Index Number	Description	Quantity	Part Number	CAGE
4-2	ACMETHREAD STRUT 12-15	1	22-796212	30978
4-2	ACMETHREAD STRUT 19-25	1	22-796206	30978
4-2	ACMETHREAD STRUT 25-36	1	22-796200	30978
4-2	ACMETHREAD STRUT 37-58	1	22-796202	30978
4-2	ACMETHREAD STRUT 56-88	1	22-796204	30978
* -1	TUBE END ADAPTER, STRUT	1	22-796067	30978
* -2	NIPPLE STRUT INLET 1/8"NPSM	1	22-796065	30978
* -3	O-RING 3MM X 63MM BN70	1	22-796051	30978
-4	TUBE DET. FOR 12" ACME STRUT	1	22-796215	30978
-4	TUBE DET. FOR 19" ACME STRUT	1	22-796225	30978
-4	TUBE DET. FOR 25" ACME STRUT	1	22-796226	30978
-4	TUBE DET. FOR 37" ACME STRUT	1	22-796227	30978
-4	TUBE DET. FOR 56" ACME STRUT	1	22-796228	30978
-5	LABEL, SIZE FOR 796212 STRUT	1	22-LBL212	30978
-5	LABEL, SIZE FOR 796206 STRUT	1	22-LBL206	30978
-5	LABEL, SIZE FOR 796200 STRUT	1	22-LBL200	30978
-5	LABEL, SIZE FOR 796202 STRUT	1	22-LBL202	30978
-5	LABEL, SIZE FOR 796204 STRUT	1	22-LBL204	30978
-6	LABEL, 12” ACMETHREAD STRUT	1	22-796212L	30978
-6	LABEL, 19” ACMETHREAD STRUT	1	22-796206L	30978
-6	LABEL, 25” ACMETHREAD STRUT	1	22-796200L	30978
-6	LABEL, 37” ACMETHREAD STRUT	1	22-796202L	30978
-6	LABEL, 56” ACMETHREAD STRUT	1	22-796204L	30978
* -7	TAPE REFL YELLOW 1"	4	22-796085	30978
-8	SEAL 2.5"O.D 2.125"I.D X 3/16	1	22-796018	30978
-9	ACME SCREW DET. 12-15 STRUT	1	22-796213	30978
-9	ACME SCREW DET. 19-25 STRUT	1	22-796237	30978
-9	ACME SCREW DET. 25-36 STRUT	1	22-796234	30978
-9	ACME SCREW DET. 37-58 STRUT	1	22-796235	30978
-9	ACME SCREW DET. 56-88 STRUT	1	22-796236	30978
-10	ACME STRUT COLLAR	1	22-796240	30978
-11	O-RING AS-226 (2"X.139) BN 70	1	22-796562	30978
-12	MALE SCR END, ACME SCR, STRUT	1	22-796239	30978
-13	SET SCREW 1/4-20 X 1/2" CUP SS	1	22-895292	30978
** -14	SHORT TUBE END, 12"STRUT	1	22-796217	30978

* PARTS EXCLUDED FOR 22-796212/ ** PARTS INCLUDE IN 22-796212 ONLY

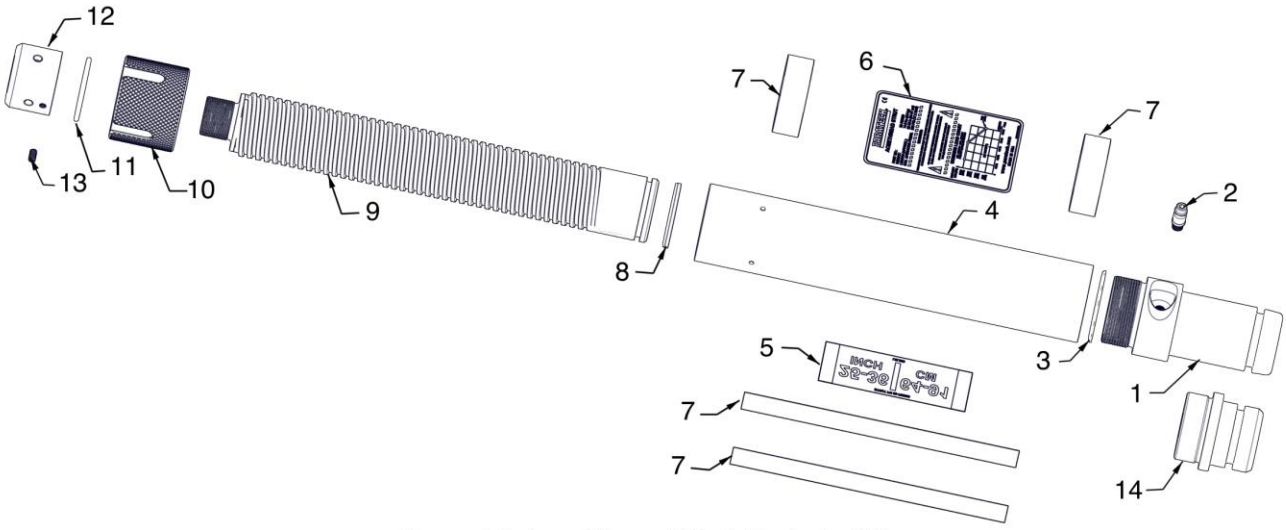


Figure 4-2 AcmeThread Strut, Exploded View

Table 4-3. Low Clearance Supports, Extensions, Base Plates and Connectors Parts List

Figure and Index Number	Description	Quantity	CAGE	Part Number
4-3-1	RIGID STRUT 1	1	30978	22-796031
-2	RIGID STRUT 3	1	30978	22-796032
-3	RIGID STRUT 5	1	30978	22-796033
-4	RIGID STRUT 7	1	30978	22-796034
-5	STRUT EXTENSION 6	1	30978	22-796017
-6	STRUT EXTENSION 12	1	30978	22-796012
-7	STRUT EXTENSION 24	1	30978	22-796024
-8	STRUT EXTENSION 36	1	30978	22-796036
-9	STRUT EXTENSION CONVERTER	1	30978	22-796035
	MULTI-BASE	1	30978	22-796025
-10	MULTI-BASE, DETAIL	1	30978	22-796027
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
	CHAIN WEDGE FOR 3/8" CHAIN	1	30978	22-796130
-12	HOUSING FOR 3/8" CHAIN WEDGE	1	30978	22-796059
-13	TWO-POSITION LOCK PIN ASS'Y	1	30978	22-796242
	V-BASE	1	30978	22-796090
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-14	V-END BASE, DETAIL	1	30978	22-796091
-15	EYELET 5/8"UNF - DETAIL	1	30978	22-796096
	OFFSET CONE BASE	1	30978	22-796560
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-16	HOUSING FOR OFFSET CONE BASE	1	30978	22-796561
-17	CONE FOR OFFSET CONE BASE	1	30978	22-796563
	CONTOUR BASE	1	30978	22-796270
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-18	CONTOUR BASE, DETAIL	1	30978	22-796271
	RUBBER BASE 4"	1	30978	22-796190
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-15	EYELET 5/8"UNF - DETAIL	1	30978	22-796096
-19	HUB, STRUT ENDS	1	30978	22-796064
-20	RUBBER FOOT MOLDING, STRUT	1	30978	22-796192
-21	3/8 LOCK WASHER S.S	1	30978	22-796088
-22	SCR 3/8-16 HEX HD 7/8"LG S.S	1	30978	22-796082
	RIGID BASE 6	1	30978	22-796070
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-15	EYELET 5/8"UNF - DETAIL	1	30978	22-796096
-19	HUB, STRUT ENDS	1	30978	22-796064
-22	SCR 3/8-16 HEX HD 7/8"LG S.S	1	30978	22-796082
-23	6"SQ STD PRESSURE PLATE	1	30978	22-796061
	SWIVEL BASE 6	1	30978	22-796060
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-15	EYELET 5/8"UNF - DETAIL	1	30978	22-796096
-24	HUB, FOR STRUT SWIVEL BASE	1	30978	22-796066
-25	6"SQ SWIVEL PRESSURE PLATE	1	30978	22-796062
-26	SPHERICAL WASHER, STRUT	1	30978	22-796074
-27	DISC SPRING 20X10.2X1 SS	1	30978	22-670570
-28	3/8-16 HEX NYL LOCKNUT SS	1	30978	22-796086
-29	SCR 3/8-16 HEX HD 1.5"LG ULTRA	1	30978	22-796084

Table 4-3. Low Clearance Supports, Extensions, Base Plates and Connectors Parts List

Figure and Index Number	Description	Quantity	CAGE	Part Number
	HINGED BASE 6	1	30978	22-796140
4-3-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-15	EYELET 5/8"UNF - DETAIL	1	30978	22-796096
-21	3/8 LOCK WASHER S.S	1	30978	22-796088
-22	SCR 3/8-16 HEX HD 7/8"LG S.S.	1	30978	22-796082
-23	6"SQ STD PRESSURE PLATE	1	30978	22-796061
-30	CLEVIS, MALE END	1	30978	22-796142
-31	CLEVIS FEMALE, HINGED BASE	1	30978	22-796144
-32	RET RING EXT. 3/4"SHAFT H.SECT	2	30978	22-796148
-33	PIN, CLEVIS, STRUT HINGE BASE	1	30978	22-796146
	HINGED BASE W/ANCHOR RING 6	1	30978	22-796150
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-21	3/8 LOCK WASHER S.S.	1	30978	22-796088
-22	SCR 3/8-16 HEX HD 7/8"LG S.S.	1	30978	22-796082
-23	6"SQ STD PRESSURE PLATE	1	30978	22-796130
-31	CLEVIS FEMALE, HINGED BASE	1	30978	22-796144
-34	CLEVIS, MALE END	1	30978	22-796142A
-35	ANCHOR RING, FINISHED	1	30978	22-796154
-36	1/2-13 HEX NUT S.S.	2	30978	22-796434
-37	1/2" REG. SPRNG LOCK WASHER SS	2	30978	22-796438
-38	WASHER 1/2 TYPE B SER N SS	2	30978	22-796435
-39	PIN FOR ANCHOR RING	1	30978	22-796145
	RIGID BASE 12	1	30978	22-796180A
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-40	12" PRESSURE PLATE, DETAIL	1	30978	22-796063
-41	SCR 3/8-16 X 1.125" GR 8 ZINC	1	30978	22-670549
-42	3/8"PLAIN "A" WASHR SER. N, SS	1	30978	22-796099
-43	HUB FOR 12"PLAT	1	30978	22-796064B
-44	HELI-COIL 3/8-16 X .375 SS	1	30978	22-550054
-45	NUT 3/8 SPINN GRIP FL L-NUT SS	1	30978	22-670538
	SWIVEL BASE 12	1	30978	22-796180B
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-15	EYELET 5/8"UNF - DETAIL	1	30978	22-796096
-24	HUB, FOR STRUT SWIVEL BASE	1	30978	22-796066
-26	SPHERICAL WASHER, STRUT	1	30978	22-796074
-27	DISC SPRING 20X10.2X1 SS	1	30978	22-670570
-40	12" PRESSURE PLATE, DETAIL	1	30978	22-796063
-44	HELI-COIL 3/8-16 X .375 SS	1	30978	22-550054
-45	NUT 3/8 SPINN GRIP FL L-NUT SS	1	30978	22-670538
-46	SCR 3/8-16 HEX HD 1.75"LG GR 8	1	30978	22-670550
-47	ADAPTER FOR SWIVEL BASE PLATE	1	30978	22-796184
	HINGED BASE 12	1	30978	22-796180R
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-31	CLEVIS FEMALE, HINGED BASE	1	30978	22-796144
-34	CLEVIS, MALE END	2	30978	22-796142A
-36	1/2-13 HEX NUT S.S.	2	30978	22-796434
-37	1/2" REG. SPRNG LOCK WASHER SS	2	30978	22-796438
-38	WASHER 1/2 TYPE B SER N SS	1	30978	22-796435
-40	12" PRESSURE PLATE, DETAIL	1	30978	22-796063
-41	SCR 3/8-16 X 1.125" GR 8 ZINC	1	30978	22-670549
-42	3/8"PLAIN "A" WASHR SER. N, SS	1	30978	22-796099
-44	HELI-COIL 3/8-16 X .375 SS	1	30978	22-550054
-45	NUT 3/8 SPINN GRIP FL L-NUT SS	1	30978	22-670538
-46	PIN 3/4" WITH 1/2"THREADS	1	30978	22-796147

Table 4-3. Low Clearance Supports, Extensions, Base Plates and Connectors Parts List

Figure and Index Number	Description	Quantity	CAGE	Part Number
	HINGED BASE W/ANCHOR RING 12	1	30978	22-796180C
4-3-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-31	CLEVIS FEMALE, HINGED BASE	1	30978	22-796144
-34	CLEVIS, MALE END	1	30978	22-796142A
-35	ANCHOR RING, FINISHED	1	30978	22-796154
-36	1/2-13 HEX NUT S.S.	2	30978	22-796434
-37	1/2" REG. SPRNG LOCK WASHER SS	2	30978	22-796438
-38	WASHER 1/2 TYPE B SER N SS	2	30978	22-796435
-39	PIN FOR ANCHOR RING	1	30978	22-796145
-40	12" PRESSURE PLATE, DETAIL	1	30978	22-796063
-41	SCR 3/8-16 X 1.125" GR 8 ZINC	1	30978	22-670549
-42	3/8"PLAIN "A" WASHR SER. N, SS	1	30978	22-796099
-44	HELI-COIL 3/8-16 X .375 SS	1	30978	22-550054
-45	NUT 3/8 SPINN GRIP FL L-NUT SS	1	30978	22-670538
	ANGLE BASE 3" X 4"	1	30978	22-796092
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-15	EYELET 5/8"UNF - DETAIL	1	30978	22-796096
-19	HUB, STRUT ENDS	1	30978	22-796064
-45	NUT 3/8 SPINN GRIP FL L-NUT SS	1	30978	22-670538
-47	ANGLE, T-PLATE, STRUT	1	30978	22-796097
-48	SCR 3/8 FLAT HD SOC 1.125" SS	1	30978	22-796083
	CHANNEL BASE 4" X 4"	1	30978	22-796134
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-15	EYELET 5/8"UNF - DETAIL	1	30978	22-796096
-19	HUB, STRUT ENDS	1	30978	22-796064
-45	NUT 3/8 SPINN GRIP FL L-NUT SS	1	30978	22-670538
-49	SPRING PIN 3/16 X 9/16 SS	1	30978	22-670556
-50	3/8-16 FLAT SOC HD 1"LG SS	1	30978	22-796531
-51	CHANNEL DET FOR 4X4" TIMBER	1	30978	22-796135
	CHANNEL BASE 6" X 6"	1	30978	22-796136
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-15	EYELET 5/8"UNF - DETAIL	1	30978	22-796096
-19	HUB, STRUT ENDS	1	30978	22-796064
-45	NUT 3/8 SPINN GRIP FL L-NUT SS	1	30978	22-670538
-49	SPRING PIN 3/16 X 9/16 SS	1	30978	22-670556
-50	3/8-16 FLAT SOC HD 1"LG SS	1	30978	22-796531
-52	CHANNEL DET FOR 6X6" TIMBER	1	30978	22-796137
	45° BASE	1	30978	22-796690
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-34	CLEVIS, MALE END	1	30978	22-796142A
-36	1/2-13 HEX NUT S.S.	2	30978	22-796434
-37	1/2" REG. SPRNG LOCK WASHER SS	2	30978	22-796438
-38	WASHER 1/2 TYPE B SER N SS	2	30978	22-796435
-46	PIN 3/4" WITH 1/2"THREADS	1	30978	22-796147
-73	45° BASE WELDMENT	1	30978	22-796694
-74	FEMALE CLEVIS W/(4)THD HOLES	1	30978	22-796144B
-75	SCR 5/16-18X 1.25 HEXHD SS	4	30978	22-670520
-76	LOCK WASHER 5/16, REGULAR, SS	4	30978	22-670574

Table 4-3. Low Clearance Supports, Extensions, Base Plates and Connectors Parts List

Figure and Index Number	Description	Quantity	CAGE	Part Number
	ANGLED RUBBER BASE (ESU)	1	30978	22-796266
4-3-15	EYELET 5/8"UNF - DETAIL	1	30978	22-796096
-54	TWO-POSITION LOCK PIN ASS'Y	1	30978	22-796242
-55	ANGLE RUBBER BASE W/RUBBER	1	30978	22-796266R
	ELEVATOR SUPPORT LEFT ARM	1	30978	22-796260L
-54	TWO-POSITION LOCK PIN ASS'Y	1	30978	22-796242
-56	ARM ELEVATOR SUPPORT, DETAIL	1	30978	22-796264
-57	SCR 1/2-13 X 2.5"SOC. HD ZINC PL	4	30978	22-796433
-58	HOUSING, ELEVATOR SUPPORT ARM	1	30978	22-796262
	ELEVATOR SUPPORT RIGHT ARM	1	30978	22-796260R
-54	TWO-POSITION LOCK PIN ASS'Y	1	30978	22-796242
-56	ARM ELEVATOR SUPPORT, DETAIL	1	30978	22-796264
-57	SCR 1/2-13 X 2.5"SOC. HD ZINC PL	4	30978	22-796433
-58	HOUSING, ELEVATOR SUPPORT ARM	1	30978	22-796262
	SPRING LOADED CONNECTOR	1	30978	22-796170
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-59	FEM END, SPRING CONN., STRUT	1	30978	22-796174
-60	SPRING 1.5X2 HEAVY LOAD RED	1	30978	22-670538
-61	MALE END, SPRING CONN., STRUT	1	30978	22-796178
-62	SCREW, SPRING CONN. STRUT	1	30978	22-670556
	ADJUSTABLE THREADED CONNECTOR	1	30978	22-796160
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-63	FEM. END, ADJUST. CONN. STRUT	1	30978	22-796162
-64	SET SCREW 1/4-20 X 1/2" CUP SS	1	30978	22-895292
-65	MALE END, ADJ CONN, STRUT	1	30978	22-796164
	WALER STOP BLOCK	1	30978	22-796285
-66	STRIKER FO RAKER LATCH BASE	1	30978	22-796254
-67	LEVER FOR RAKER LATCH BASE	1	30978	22-796253
-68	SPRING C0480-045-1000S	1	30978	22-796256
-69	WALER STOP BLOCK, FINISHED	1	30978	22-796286
-70	PIN FOR STOP BLOCK	1	30978	22-796289
	WALER CONNECTOR	1	30978	22-796287
-77	WALER CONNECTOR, MACH. DETAIL	1	30978	22-796288
-66	STRIKER FO RAKER LATCH BASE	1	30978	22-796254
-67	LEVER FOR RAKER LATCH BASE	1	30978	22-796253
-68	SPRING C0480-045-1000S	1	30978	22-796256
	CHANNEL BASE METRIC 4.3" X 6"	1	30978	22-796131
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-15	EYELET 5/8"UNF - DETAIL	1	30978	22-796096
-19	HUB, STRUT ENDS	1	30978	22-796064
-45	NUT 3/8 SPINN GRIP FL L-NUT SS	1	30978	22-670538
-49	SPRING PIN 3/16 X 9/16 SS	1	30978	22-670556
-50	3/8-16 FLAT SOC HD 1"LG SS	1	30978	22-796531
-71	CHANNEL FOR 4.25"BASE	1	30978	22-796138
	CHANNEL BASE METRIC 6.3" X 7"	1	30978	22-796133
-11	PULL ONLY LOCK PIN ASS'Y	1	30978	22-796072
-15	EYELET 5/8"UNF - DETAIL	1	30978	22-796096
-19	HUB, STRUT ENDS	1	30978	22-796064
-45	NUT 3/8 SPINN GRIP FL L-NUT SS	1	30978	22-670538
-49	SPRING PIN 3/16 X 9/16 SS	1	30978	22-670556
-50	3/8-16 FLAT SOC HD 1"LG SS	1	30978	22-796531
-72	CHANNEL FOR 6.25"BASE	1	30978	22-796139

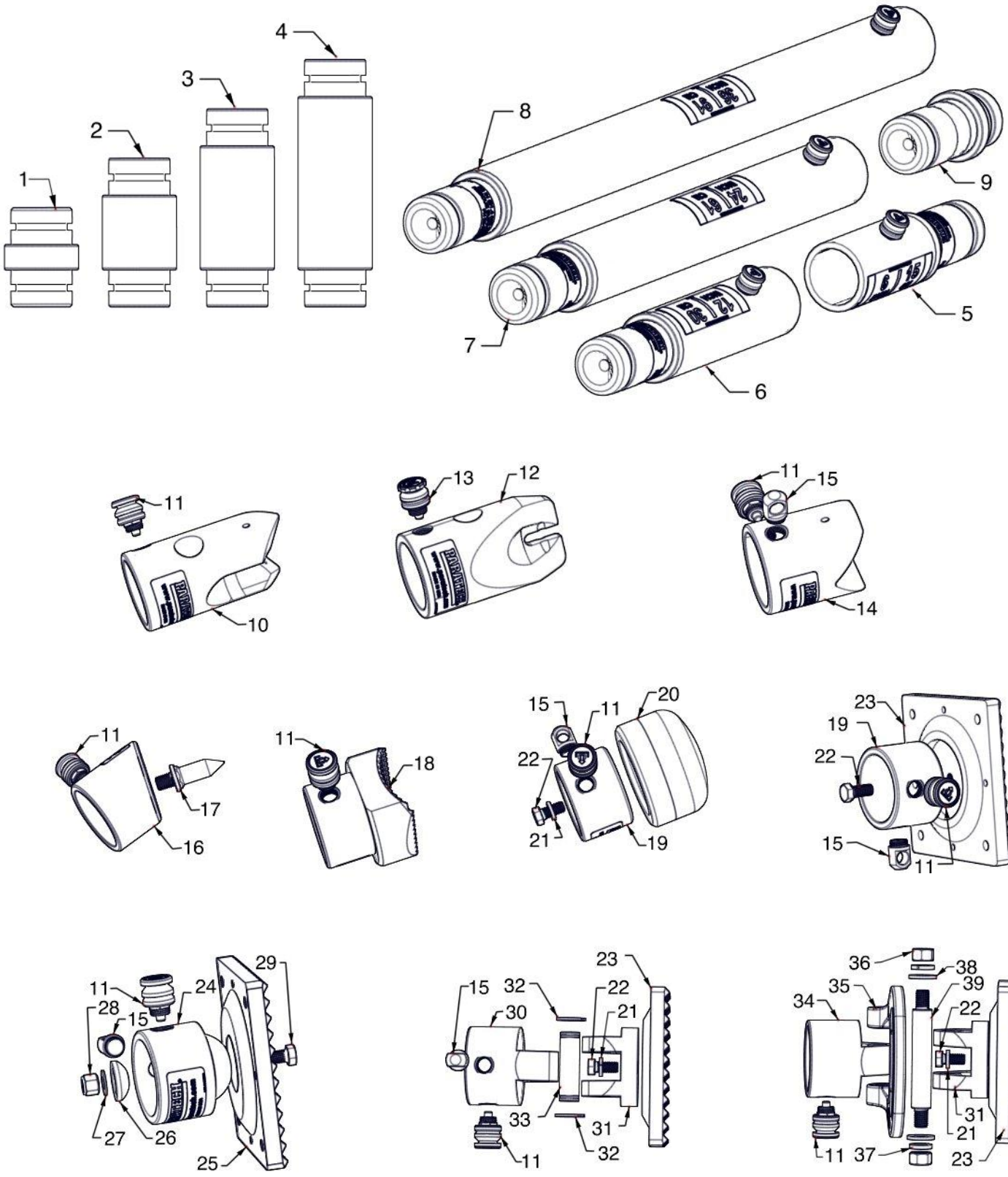
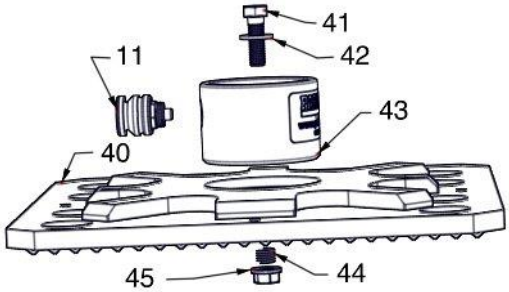
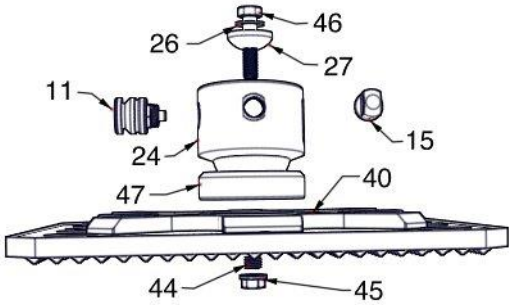
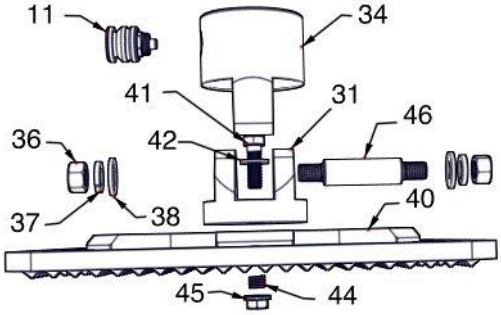
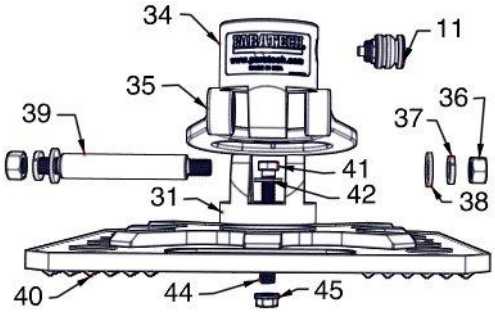


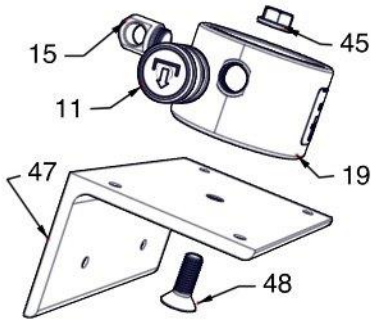
Table 4-3. Low Clearance Supports, Extensions, Base Plates and Connectors Parts List

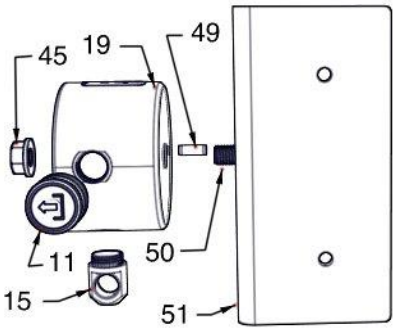


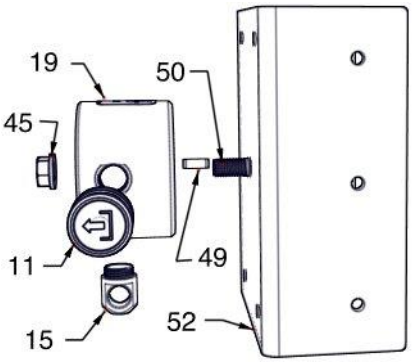


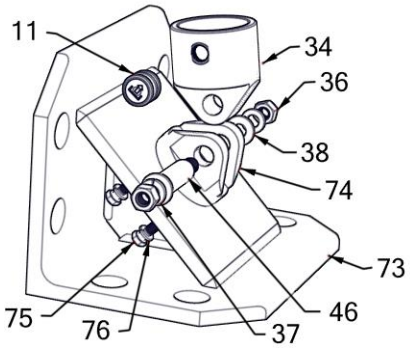












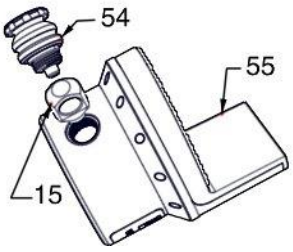


Table 4-3. Low Clearance Supports, Extensions, Base Plates and Connectors Parts List

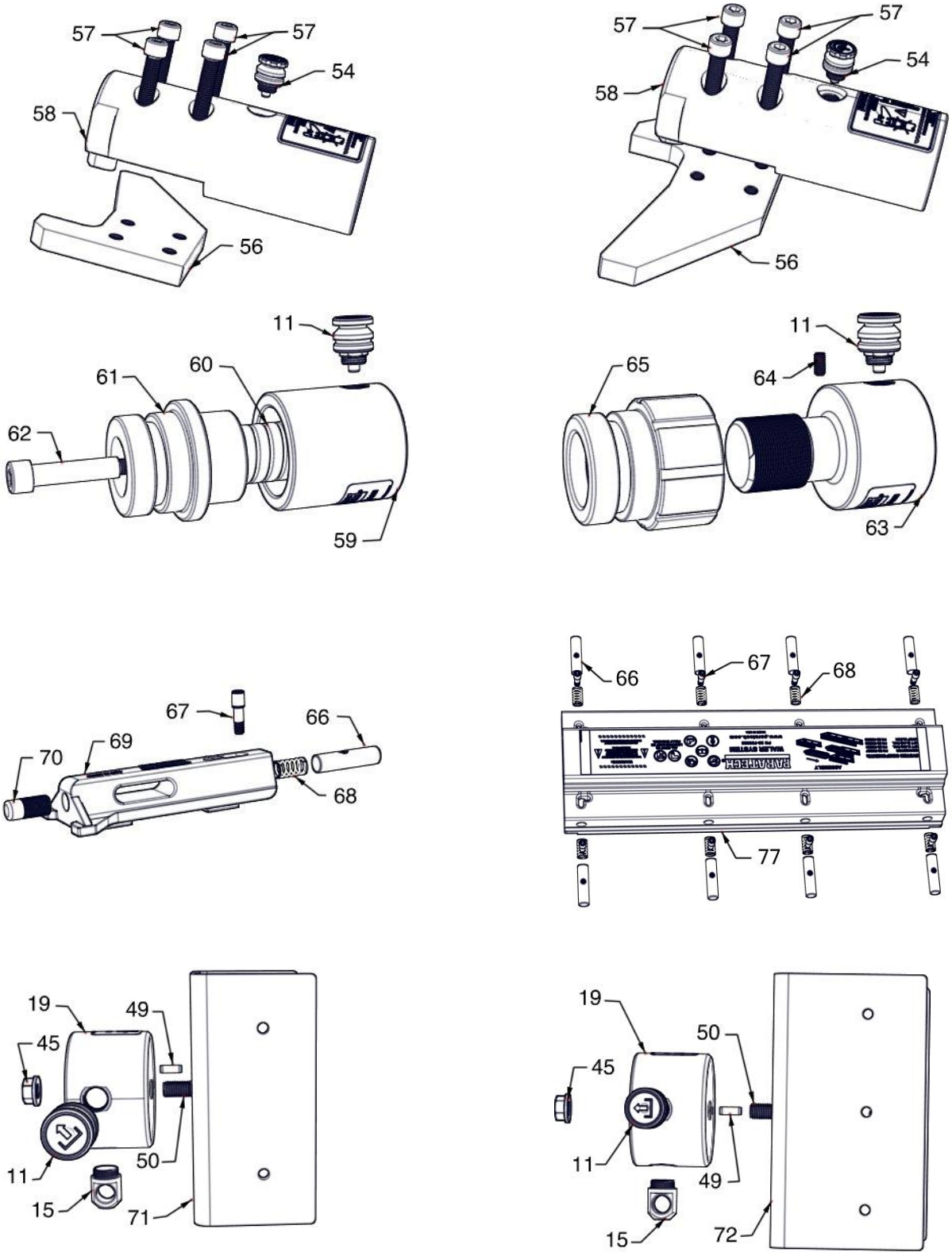


Table 4-4. Code to Name List

CAGE	Manufacturer's or Vendor's Name and Address
30978	Paratech Incorporated, 1025 Lambrecht Road, Frankfort, Illinois 60423

RSS LIMITED WARRANTY

Each RSS or component thereof, manufactured by Paratech Incorporated, has been thoroughly inspected and properly adjusted before shipment to insure the highest quality and the greatest possible reliability.

Paratech Incorporated (hereinafter referred to as "Seller") hereby warrants the RSS or component thereof to the original retail buyer only against defects in material and workmanship under normal use and service for a period of five years from the date of purchase. This warranty shall constitute the sole warranty of the Seller with respect to the RSS or component thereof. THE SELLER HEREBY DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The Seller neither assumes nor authorizes any other person to assume for it any other obligations or liabilities in connection with the sale or use of this product.

Should there be any defects in the material or workmanship of the RSS, buyer should return the defective product to the factory for inspection with shipping prepaid within one year from the date of purchase. If inspection shows that the RSS or a component thereof is defective and that such defects were not caused by negligence, misuse, accident or unauthorized service, the product sold hereunder will be repaired or replaced at the option of the Seller, without charge, FOB at the factory, Frankfort, Illinois.

THIS REMEDY SHALL BE THE EXCLUSIVE REMEDY FOR BREACH OF WARRANTY WITH RESPECT TO THE RSS OR COMPONENTS THEREOF. THE SELLER SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY WITH RESPECT TO THE RSS AND COMPONENTS THEREOF FROM ANY DELAY IN THE PERFORMANCE OF THE REMEDY HEREUNDER.

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Paratech Incorporated
P.O. Box 1000
Frankfort, IL 60432 USA

Phone: 815.469.3911
Fax: 815.469.7748
www.paratech.com
E-mail: paratech@paratech.us